

UGANDA PROTECTORATE.

ANNUAL REPORT

OF THE

DEPARTMENT OF
AGRICULTURE

(PART I.)

FOR THE

Year ended 31st December, 1937.

PRICE : SHS. 3.

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Published by Command of His Excellency the Governor.

ENTEBBE:

PRINTED BY THE GOVERNMENT PRINTER, UGANDA.
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AGRICULTURAL LABORATORIES AND KAM- PALA PLANTATION	..	..	Kampala	265	18
BOTANIC GARDENS	..	..	Entebbe	60	38
SENIOR AGRICULTURAL OFFICER	..	..	Jinja	67	101-105

PRINCIPAL EXPERIMENT STATIONS.

- | | |
|-----------------------------------|----------------------------|
| (1) Kampala. | (2) Serere, Teso. |
| (3) Bukalasa, Mengo. | (4) Bugusege, Bugishu. |
| (5) The Botanic Gardens, Entebbe. | (6) Kawanda (New Station). |

SUBSIDIARY STATIONS.

- | | |
|------------------------------|------------------------------|
| (1) Ngetta, Lango. | (2) Wanyange, Busoga. |
| (3) Kyemboga, Toro. | (4) Mbale, Central District. |
| (5) Kachwekano Farm, Kigezi. | |

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DEPARTMENT OF AGRICULTURE.

ANNUAL REPORT

For the Year ended 31st December, 1937.

(PART I).

This part of the Annual Report is the record of the administration and education sections of the Department and excludes detailed accounts of experimental work, which forms the subject of a separate report to be published as Part II later in the year.

Weather Conditions.

The rains began earlier than usual and were exceptionally heavy during the first part of the year. In most parts of the Eastern and Northern Provinces this excess resulted in the total rainfall being above the average. At the Serere Experiment Station a total of 59.97 inches was recorded, being 5.64 inches above the mean. In Buganda and the Western Provinces there was a dry spell from July to September, and, although in Buganda the succeeding two months were exceptionally wet, the total rainfall was slightly below average. The dry season began later in December than usual. On the whole, however, the general climatic conditions which prevailed were favourable to agriculture.

Exports.

The following table, which is an extract from the larger table shown as Appendix VI, summarises the exports of the principal agricultural products:—

Article	Unit of Quantity	1935		1936		1937	
		Quantity	£	Quantity	£	Quantity	£
Cotton Lint <i>bale of 400 lbs. net.</i>		253,242	2,822,739	321,332	3,326,879	338,391	4,269,284
Cotton Seed .. <i>ton.</i>		50,685	135,779	85,762	263,180	103,441	392,082
Coffee Raw .. <i>cwt.</i>		125,706	230,976	228,783	381,244	257,939	420,481
Tobacco manufactured .. <i>lb.</i>		9,012	1,352	10,364	1,743	22,536	3,784
Tobacco unmanufactured .. <i>lb.</i>		479,220	15,705	228,289	8,058	166,842	4,344
Cigarettes <i>lb.</i>		110,906	13,649	207,306	24,941	405,923	40,677
Tea <i>cwt.</i>		338	1,894	736	4,067	1,360	7,728
Sugar refined <i>cwt.</i>		253,951	168,358	180,652	90,127	226,840	123,516
Rubber Plantation Raw .. <i>Cental.</i>		8,314	20,394	12,819	30,724	12,699	33,043
Groundnuts <i>ton.</i>		1,370	16,460	1,465	18,668	135	1,624
Sesame seed <i>ton.</i>		1,620	17,629	1,551	19,227	1,123	14,017

Notes on the Major Economic Crops.

COTTON.

1936-1937 CROP.

In the Annual Report for 1936 the Department's estimate of the crop was 330,000 bales, which proved to approximate to the actual figure. The following table gives details of acreage and production figures:—

Province and District	Acreage		Sales in tons		Average yield per acre in lbs.	
	1935/36	1936/37	1935/36	1936/37	1935/36	1936/37
BUGANDA—						
Mengo	333,618	611,253	40,705	69,971	273	256
*Entebbe	113,678	..	19,948	..	393	..
Masaka	52,128	65,947	13,685	14,384	588	489
*Mubende	106,053	18,148	11,455	4,527	242	559
EASTERN—						
Busoga	205,408	188,032	42,271	40,524	461	483
Budama	74,083	80,714	7,381	8,705	223	242
Central Bugwere ..	127,658	133,359	11,929	15,706	209	264
Bugishu	44,019	47,043	3,246	4,440	165	211
Teso	116,812	150,878	16,217	18,394	311	273
NORTHERN—						
Lango	90,689	84,784	10,122	9,867	250	261
Bunyoro	24,626	24,016	2,953	2,802	269	261
Gulu	27,700	28,422	4,013	3,093	325	264
Chua	24,000	25,259	3,946	2,671	368	237
West Nile	10,800	11,700	1,726	1,395	358	267
WESTERN—						
Toro	14,257	15,142	1,131	894	178	132
TOTALS ..	1,365,529	1,484,697	190,728	197,373	313	298

The total sales of seed cotton amounted to 197,396 tons—equivalent to 331,625 bales of 400 lbs each. The actual export of cotton lint was 1,353,566 centals, or 338,391 bales of 400 lbs. net. This is well in advance of the previous year's record crop of 321,348 bales.

In most of the country east of the Nile the best yields are obtained from early planted cotton, and propaganda to this effect resulted in a greater acreage being planted earlier than in previous years. This necessitated an advancement in the normal date of opening the marketing season and extended the total buying period, thus minimising the congestion at buying posts and facilitating the movement of lint bales and cotton seed to the coast.

The price paid to the grower was higher than has been the case for some years. With American Middling at 6·68 pence in Liverpool on 14th December, for July futures, seed cotton in the Northern and Eastern Provinces of Uganda was worth Shs. 12/50 per 100 lbs. On 18th January, when the Buganda season opened, the price had risen

*The Entebbe District was amalgamated with the Mengo District on 1st November, 1936.

The Singo County of Mubende District was included in Mengo District on 1st January, 1937.

to Shs. 14 and in March Shs. 18 was paid. At that time, however, the bulk of the crop in the Eastern and Northern Provinces had been sold and only a small proportion of growers in Buganda were fortunate enough to sell at the top price. It was estimated that the average price paid throughout the country was Shs. 13/22.

Owing to the early onset of the rains a certain amount of cotton was stained but, on the whole, the grade was satisfactory and the proportion of low grade cotton small. An average of Shs. 3 to Shs. 4 was paid for this cotton.

While the crop was still in the development stage a certain amount of latitude with regard to the erection of temporary stores at ginneries was permitted, but, after due warning, the regulations have been gradually enforced with the result that these temporary mud-and-wattle structures have now been replaced by permanent stores.

The local price for cotton seed was Shs. 55 per ton, free on rail, during the first part of the season. It fell as low as Shs. 40 but recovered to Shs. 50. In 1936 the price opened at Shs. 35, fell to Shs. 28/50 and closed at Shs. 33/50. The high figure this year rendered it profitable to export seed from all zones and the large total of 103,441 tons was exported. The Uganda Cotton Association again efficiently supervised the quota allocation in co-operation with the railway authorities.

Only minor changes occurred in the cotton zones. In 1934 it appeared that the Pink Bollworm would cause serious damage if it spread from Lango and Mubende into surrounding zones, so restrictions were placed upon the collection of cotton by ginneries situated on zone boundaries. The worm has now, however, spread into all cotton growing areas without doing substantial harm and it has been possible therefore to restore border ginnery privileges to Tiriri and Kawolongoyo ginneries.

As in previous years, the minimum price payable for seed cotton was calculated from the formula recommended by the Price Fixing Committee. This price is worked out daily for each zone and telegraphed to District Commissioners. It is not a price fixed by law but it keeps Government officers on the spot in touch with market fluctuations and enables them to ensure that the growers receive a fair market value for their cotton.

At one time Ankole District was considered a suitable area for cotton growing. This district differs in climate from the other cotton growing areas and an attempt to grow cotton on a commercial scale was not successful. It was thought, however, that by utilising the September rains instead of planting earlier in the year better results might be obtained. Cotton seed was therefore distributed again and the crop produced 38 bales. Cotton in Ankole must still be regarded as in the experimental stage.

The cotton crop of the Missenyi area of Bukoba District in the Tanganyika Territory, which had been grown from Uganda seed, was purchased by a member of the Masaka Ginning Pool and imported into Masaka for ginning.

1937-1938 CROP.

The planting season was a favourable one and a larger acreage of cotton than usual was planted early. Germination of seed, except in a few small areas, was excellent, and the condition of the young crop

was highly satisfactory. Unfortunately, much of the benefit of early planting was nullified by the exceptionally wet weather in November just when the cotton was maturing its first bolls, and its continuance into the middle of December. The wet conditions encouraged blackarm with a resultant reduction in yields—particularly in Teso. On the other hand weather conditions were very favourable to the Lango crop. In Buganda the effect of the late and heavy rains was to prolong the vegetative period and delay fruiting. At the end of the year little cotton was ripe but there was a great flush of flowers, and, although there was every indication of a large crop, it was difficult to make a confident estimate of yield.

The following table gives the acreages by districts and provinces:—

				1936	1937
				<i>Acres.</i>	<i>Acres.</i>
EASTERN PROVINCE—					
Busoga ..	..	..	..	188,032	239,808
Budama ..	..	..	..	80,714	84,590
Central—Bugwere	..	..	..	133,359	148,239
Bugishu ..	..	..	..	47,043	35,285
Teso ..	..	..	..	150,878	141,016
TOTALS ..				600,026	648,938
BUGANDA PROVINCE—					
Mengo ..	..	..	..	611,253	793,731
Masaka ..	..	..	..	65,947	57,161
Mubende ..	..	..	..	18,148	27,782
TOTALS ..				695,348	878,674
NORTHERN PROVINCE—					
Lango ..	..	..	..	84,784	102,296
Bunyoro ..	..	..	..	24,016	18,876
Acholi—Madi	..	..	..	5,672	5,040
Gulu ..	..	..	..	22,750	20,297
Chua ..	..	..	..	25,259	32,025
West Nile ..	..	..	..	11,700	15,845
TOTALS ..				174,181	194,379
WESTERN PROVINCE—					
TOTALS ..				15,274	14,909
GRAND TOTALS ..				1,484,829	1,736,900

The total of 1,736,900 acres is the highest so far recorded. While it is realised that some of the returns, particularly those from Buganda, err on the high side, there is no doubt that the area planted continues to increase. The Department's estimate of the crop for the 1938 marketing season is 346,000 bales*.

Coffee.

Exports of coffee increased from 228,783 cwts. valued at £381,244 in 1936, to 257,939 cwts. valued at £420,481. These figures indicate an average value only slightly below the 1936 level but, whereas during the first six months very satisfactory values ruled, a decline occurred later which was followed by a sudden fall in prices caused by Brazil's action in reducing the export tax by £7 a ton. The local value of coffee

*May, 1938. The purchase figures to the end of April, 1938, amounted to 406,000 bales,

at the end of the year was 15 cents per lb. for hulled robusta coffee in Kampala. We must face the possibility of Brazilian coffees competing seriously with Uganda robustas with a consequent fall in prices. There is no reason, however, why the African producer in Uganda should not compete on very favourable terms with producers in Brazil, and, provided he accepts low prices and maintains his plantations and the quality of his produce, he should in the long run emerge victorious from the struggle and considerably strengthen his position on the world's market.

ARABICA COFFEE.

BUGISHU.

A million trees were issued to the peasant growers in Bugishu, an area on the slopes of Mount Elgon where coffee is grown between the altitudes of 5,000 feet and 8,000 feet.

The crop for the season ending on 30th June was 1,321 tons (parchment) as compared with 2,034 tons for the previous season. The habit of biennial fluctuation in the fruiting of arabica coffee is well known, and there is every indication that the present season's crop will again exceed two thousand tons. It is admitted, however, that production is not increasing at a rate commensurate with the increase in acreage.

Die-back, caused by overbearing, is the chief cause of failure and at the lower elevations this has long been recognised as a serious problem. Mulching is a most potent remedy and is advocated on every possible occasion. The incidence of *Antestia* bug has increased, and, while it is hardly noticeable at the higher altitudes, it is taking its toll of the crop, particularly in those areas where die-back also occurs. With these two problems to contend with, it seems that a slower rate of progress must be accepted while we consolidate the position already won by educating the African growers to better standards of cultivation and improvements in the general sanitation of their fields.

The Bugishu Coffee Scheme started the year ending 30th June, with a debit balance. The marketing system was reorganised, the Scheme continuing to purchase in the First and Second Declared Areas, while three private firms in addition to the Scheme purchased the crop in the remainder of Bugishu. A uniform price was paid to the producer and this, coupled with a rise in the value of the crop after purchase, resulted in a substantial net profit on the year's working. In order to overcome the difficulty of the firms having to purchase the coffee in parchment, the Scheme for the 1937-38 season has confined its activities to Central and South Bugishu and has leased all its pulperies in North Bugishu to the three firms. The price paid to the grower has been the ruling Mombasa price less costs of buying, handling and transport. During the season the Scheme held a weekly market for graded parchment. The results were extremely satisfactory, and the higher price paid for the graded article led to the production of a coffee on a par with that obtained from the pulperies. Unfortunately, the sudden and unforeseen fall in values affected the price received for the earlier despatches, and sales on that part of this season's production will show a loss.

ARABICA IN BUGANDA AND THE WESTERN PROVINCES.

The production of African grown arabica in Buganda remained small, and no new plantings either by Africans or Europeans have been recorded. In the Western Province, Africans have increased their plantings. Sales amounted to 328 tons, which is approximately the same as the previous season. *Antestia* continues to be a serious pest and is a limiting factor to the production of arabica in certain areas. The gradual replacement of arabica by robusta in such circumstances is being effected.

ARABICA IN THE NORTHERN PROVINCE.

The coffee industry in Bunyoro and the West Nile District is still in its infancy. In the latter district approximately 180 acres have been planted up and an initial crop of 27 tons was sold this season. The area suited to the cultivation is limited, and only by mulching and careful cultural practices can satisfactory results be obtained.

ROBUSTA COFFEE.

ROBUSTA IN BUGANDA.

8,890 tons of robusta coffee, excluding triage, were exported under the Coffee Grading Ordinance. The actual production was higher than this, as it was known that stocks were being held on the off-chance of a rise in price, but even the above figure is a satisfactory increase on the 1936 export of 6,613 tons.

In the last Report mention was made of the control of the marketing of coffee in Buganda by the establishment of coffee buying centres under the Native Produce Marketing Ordinance, and the provision for inspection of the coffee hulling plants under the Hulling of Coffee Ordinance. It is convenient here to review the effect of these measures after a full year's experience. During the first part of the season the hulling of wet coffee continued. This period was regarded as an educational one, but the matter became so serious that printed warnings had to be issued threatening legal proceedings. Frequent inspections of coffee at markets and in hulleries were made, which resulted in a general improvement in quality. Exporters assisted by refusing to deal in wet coffee, and, when unscrupulous buyers found that they could not dispose of their purchases, the buying and hulling of wet coffee ceased. By the end of the year the hulleries were turning out a grade of coffee well up to F.A.Q. standard, and, given favourable weather conditions, there is no reason why this high standard should not be maintained.

Propaganda to encourage producers to dry their coffee properly, and adequate supervision of markets to prevent the sale and purchase of wet coffee are considered essential for the maintenance of the standard of quality desired.

THE BUGANDA GOVERNMENT.

The Buganda Government maintained twenty-three nurseries from which 769,000 robusta plants were issued to African growers.

With few exceptions, the condition of native coffee plots in Buganda leaves much to be desired. Mulching or cover cropping, and terracing and bunding to maintain fertility and prevent soil wash, are rarely

practised and many of the cultural operations are performed by unsupervised immigrant labourers. One is struck by the attitude of the Muganda to the various crops. He is essentially a subsistence farmer whose first care is his food crops, the cultivation of which he thoroughly understands. The cultivation of economic crops is a side line and in most cases a purely business proposition, the success or failure of the venture being gauged by the immediate net cash return. Cotton is an exception as it has proved profitable. It gives a quick cash return and enables him to maintain a comparatively high standard of living, whereas the return from coffee is variable and unreliable and this is reflected in the care which he gives to the plantations. The Muganda is undoubtedly commercially minded and I am convinced that, once we can persuade him that better farming methods will increase his yields and his income, he will respond to our teaching.

Our trained African agricultural staff is increasing. The men are young in years and experience but in time they will gain the confidence of the peasants, when the rate of progress will increase.

ROBUSTA IN THE WESTERN PROVINCE.

In Kigezi where both arabica and robusta coffee are being cultivated, 52,000 robusta trees were issued to growers, and in Ankole four nurseries have been stocked with robusta for the replacement of arabica where the latter variety succumbs to *Antestia*.

In the Bwamba county of Toro District the robusta crop continues to do well. It is marketed by a trader having an exclusive licence granted under the Native Produce Marketing Ordinance. The production of the district was 222 tons of robusta, most of which came from Bwamba, where the previous year's crop was 104 tons.

ROBUSTA IN BUSOGA.

Some progress was made with coffee planting in the southern part of the district where 16,000 plants were issued. One new nursery has been established and about two tons of coffee were sold, which is a satisfactory beginning.

INSPECTION OF COFFEE AT CURING WORKS.

The Coffee Grading Inspector inspected 118,560 bags of coffee and rejected 2,248. Some difficulty was experienced earlier in the season with "buni" (berries which had dried on the trees while still immature). Owing to dry weather in Masaka District the proportion of "buni" was higher than usual, and although consignments were not exported with a greater percentage of defectives, including "buni", than allowed by law, the presence of these small black cherries detracted from the appearance of the samples and caused buyers to complain. This trouble was eventually remedied to a great extent by adjustments to machinery. The later pickings ripened under favourable weather conditions and the cherries were of normal size.

A much more serious defect in the quality of the earlier output of robusta from the curing works was the high percentage of pale beans. These result from various causes, such as the picking of immature cherry and the bulking and hulling of this before it is properly dried. A pale bean is a "defective", and if the percentage of "defectives" is greater

than 12%, the Coffee Grading Inspector refuses an export certificate for the consignment. Coffee which has been stored when wet, even if properly dried prior to hulling, is liable to develop pales after leaving the curing works. This resulted in complaints being received that consignments which had left Uganda passed as F.A.Q. were not up to that standard when they reached Mombasa a few weeks later.

By action in the coffee markets, at hulling plants, and finally at the curing works, the purchase, hulling and export of improperly dried coffee have been practically stopped. The exports from the curing works are now of a higher standard than that demanded by the Coffee Grading Ordinance and the position is a great improvement upon what it was a year ago. The difference in value between Bukoba robusta and Uganda robusta was then £1 to £1 10s., in favour of Bukoba. There is now practically no difference.

There are seven licensed curing works. Five of these belong to the three largest exporters of coffee while the other two are estate factories.

Tobacco.

GENERAL.

Fire-cured leaf is produced in Bunyoro District and air-cured leaf in the West Nile District, both of which are Declared Areas under the Native Produce Marketing Ordinance. The usual difficulties were experienced. In Bunyoro several nurseries failed, and over a hundred acres of good tobacco were destroyed by hail just prior to harvesting, and a certain amount of mildew occurred in the barns in the West Nile. These mishaps are merely incidental to tobacco growing and on the whole the crop did very well.

Demands for tobacco leaf totalled more than three times the amount estimated to be available. The Tobacco Advisory Committee which sat in 1936 made recommendations as to the method of allocation to be adopted in such circumstances. The 1937 crop was distributed on this basis to manufacturers and established exporters. The allocation of leaf to the former was based upon the quantity on which they paid excise duty in 1936, plus 10% for expansion and 15% for stock, while in the case of the exporter the maximum amount exported in any one year or an actual contract was taken as the basic quantity. The allocation to each licensee was made by a reduction in the same ratio as the total, calculated in this manner, bore to the estimated crop.

There were twelve applicants for licences to purchase leaf, four of whom were eliminated as being neither manufacturers nor established exporters. Even so the demand for leaf had to be reduced in the ratio of 100 : 56.

The export of manufactured tobacco was 22,536 lbs. which is more than double the export of each of the two previous years. Leaf tobacco exports were 166,842 lbs., as compared with 228,289 lbs. in 1936, being only a third of the 1935 figure. This is to be expected when the prices of cotton and coffee are high, as the people have money to spend on cigarettes, and exporters can obtain better prices by selling the leaf locally than on the overseas market. In an endeavour to co-ordinate supply and demand, efforts were made to increase the area under tobacco.

An extra 200 acres were planted in Bunyoro while the West Nile acreage was nearly doubled. The total crop of 1,603,990 lbs. of leaf was a very substantial increase on the 1936 total of 1,299,956 lbs. and nearly equal to the record crop of 1934. It will be useful here to sound a note of warning. Spectacular results in tobacco growing by a sudden expansion of acreage among primitive people are to be deprecated, and no large increase in the production of fire-cured tobacco can be expected until new growers have been trained in the cultivation and preparation of the crop.

Marketing proceeded along the usual lines, each licensee being given an area in which he purchased all tobacco of grades I and II. The fixed prices were in Bunyoro 27 cents and 17 cents per lb. respectively, and in the West Nile District 26 cents and 16 cents per lb., while in addition the licensee had to pay 3 cents per lb. to the Tobacco Cess Fund. Marketing proceeded expeditiously and the quality of the leaf proved to be very good. Six of the eight licensees were able to purchase considerably more leaf than they had been allocated.

EXPERIMENTAL CROP IN ANKOLE.

The planting season in Ankole is in the last quarter of the year. A trial crop of 300 acres planted in 1936 produced about 64,000 lbs. of air-cured White Burley leaf which was marketed in March and used in one of the Kampala cigarette factories. In order to encourage tobacco cultivation, those growers whose crop failed through no fault of their own were compensated from Government funds. The results of the trials were sufficiently successful to warrant further development. A crop was planted in September, but, as the demand is mainly for fire-cured leaf, "Western" was substituted for White Burley. A larger acreage was planted, and it is expected that the resulting leaf will form a useful addition to the supply. As the industry is still in the experimental stage, it is intended that Government should purchase and condition the crop which will then be disposed of by tender to interested firms. Any serious extension of tobacco cultivation for fire-curing in Ankole must be accompanied by a reafforestation scheme to supply wood for fuel and the construction of curing barns.

TOBACCO CESS FUND.

Monies from the fund were expended on improvements to the packing factory, maintenance of buying posts, equipment of tobacco nurseries, compensation for damage by fire to leaf in curing barns and by hail in the field and the salary of the Tobacco Factory Manager. A refund of cess was paid to exporters in respect of 123,344 lbs. of leaf.

Groundnuts.

There is no change in the attitude of the grower towards groundnuts as a cash crop. In the Eastern Province the acreage is generally upwards of 65,000 acres but the grower, although quite prepared to sell a small part of his crop if the price is sufficiently attractive, prefers to consume it when the price is low. With groundnuts at £12 per ton the average price in Teso was only 4½ to 5 cents per lb. as compared with 7 and 8 cents for shelled nuts in 1936. Marketing in Teso remained in the hands of one firm under the control of the Native Produce Marketing Ordinance

and in Bugwere it was carried out at centres established under the Ordinance. Only 135 tons were exported as compared with 1,465 during 1936.

Sesame.

As the fall in the oil seed market did not affect the price of sesame to the same extent as other commodities the local market was more favourable to the producer than that of groundnuts. 1,123 tons were exported, chiefly from Teso and the Northern Province, as compared to the previous year's figure of 1,551.

Shea Nuts.

The shea tree (*Butyrospermum*) abounds in the Teso and West Nile Districts, and from 1931 to 1933 forty-four tons were purchased from Africans. Endeavours were made to find an export market for this natural product, but the result obtained from trial consignments sent to Europe were not sufficiently remunerative to warrant continuance of the experiment. A local industry is, however, gradually developing, and a soap factory at Soroti is paying 3 cents per lb. for the nuts.

Tea.

The planting up of the acreage granted under the area restriction scheme continued and 642 acres of tea were planted which brought the total acreage under tea at the end of the year to 2,575.

The production of tea was 416,189 lbs. as compared with 262,054 in the previous year. Exports amounted to 152,320 lbs.

The Uganda and African Tea Associations have both continued to do good work and have been mainly occupied with preparing for the proposed new five-year restriction period which is due to commence on the 31st March, 1938. The Uganda Association has also been considering ways and means of instituting suitable propaganda to increase local consumption.

Sugar.

The two companies manufactured a total of 28,430 tons of white sugar as compared with 20,360 tons in 1936 and exported 11,342 tons to Tanganyika and overseas as compared with 9,033 tons last year. The acreage on the two large estates at Kakira and Lugazi decreased from 15,534 acres to 14,753.

As from 1st September, the new restriction scheme has imposed an export quota of 27,000 tons upon East Africa of which Uganda's provisional share is 12,600 tons. Legislation to control the sugar industry is in course of preparation.

Rubber.

It was expected that the exports of rubber would exceed those of the previous year owing to the high price. At one time standard smoked sheet reached 11½ pence per lb. and at this figure it became profitable to reopen abandoned estates. The yield from such trees tapped was, however, low and prices declined towards the end of the year, with the result that the export of 12,699 centals was slightly less than that of the previous year.

Pests and Disease.

There was no important incidence recorded of any of the pests and diseases which afflict agricultural products in Uganda. Blackarm disease of cotton is always a danger when the weather is too wet and at one stage the more susceptible districts in the Eastern Province caused some anxiety. With an improvement in the general weather conditions, however, no great loss of crop occurred. Reports of wilt disease have been more frequent, but this is probably due to the fact that the disease is becoming more generally recognised rather than to a real increase.

Reference has already been made to the apparently greater prevalence of the *Antestia* bug on coffee, particularly in Bugishu.

Locusts are still with us. The red locust, *Nomadacris septemfasciata* visited every district in the Buganda, Western and Northern Provinces and egg laying and the emergence of hoppers were reported from several small areas.

The hoppers were successfully dealt with by beating and burning. Towards the end of the year swarms appeared in the Eastern Province and egg laying took place in Budama and Busoga. In the former district the resulting hoppers were destroyed by the inhabitants, but in Busoga they were more difficult to deal with as they hatched out and developed in uninhabited sleeping sickness infested areas and from there invaded cultivations, doing considerable local damage to cotton, plantains and other food crops. Action was taken against these bands and at the end of the year only a few small swarms had escaped.

The Agricultural Survey Committee.

I quote from the text of the Acting Governor's Address to the Legislative Council at the meeting held on the 22nd November:

"Although fortunately the menace of desiccation and soil erosion is not as pressing here as in some other countries, no time must be lost in planning and executing an intensive campaign on all possible fronts. The driving power for individual movements rests naturally with departmental officers, but it is essential that the offensive should be conducted as part of the general scheme, subject to co-ordination, control and supervision from a central directorate. It was considered that such direction did not warrant a special appointment at the present stage, but could be assumed effectively by the Agricultural Survey Committee whose personnel comprises the technical advisers concerned in the particular remedial measures."

The object of the Committee, therefore, is to co-ordinate the various schemes and ensure the prudent expenditure of monies on them. At a meeting held in May an interim report was presented to Government which accepted the following proposals:—

"1. An investigation into the climate of Karamoja and trials of various methods of improving or otherwise obtaining water supplies in this area. Government has provided additional staff in the Geological Department for this purpose.

2. The demarcation of a barrier forest on the Teso-Karamoja border for the purpose of preventing the spread of desert

conditions into inhabited and cultivated country. The necessary forestry staff has been provided for the work, which will be started in 1938.

3. Concentration on three or four gombololas, and, in the words of the report, 'doing everything that may be necessary to put things right from a soil deterioration point of view'. The provision of contour bunds similar to those at Serere, the planting of trees for fuel and building poles, the improvement of domestic and cattle water supplies would require the provision of funds. It would then be necessary to endeavour to persuade the people to plant such crops as cotton on the contour, to distribute the weeds in rows also along the contour, to adopt as nearly as may be practicable the Serere or Bukalasa system of resting the land after the cropping cycle, to control grazing so as not to damage the resting land, to sell off cattle if practicable that may be surplus to the carrying power of the land, to make and use cattle manure, to adopt a system of land tenure that will enable each occupier to rest land without fear of its being claimed for cultivation by someone else, and in fact to do all those things that are recognised as being correctives for, or preventives against, soil deterioration and erosion."

Funds have been provided and the work will be put in hand as soon as estimates can be prepared.

Soil Erosion and Fertility.

The need for soil conservation measures and the spread of knowledge with regard to the maintenance and improvement in the fertility of our soils are our most pressing problems and extensive propaganda is carried out on every possible occasion. The mass of the population is not yet conscious of, or prefers to ignore, the dangers of continuing with its present methods of cultivation, but by continued propaganda, increased field staff and practical demonstrations of better farming methods, it is hoped to arouse their interest.

In the Teso District, as the result of propaganda, assisted by financial support from the Native Administration for the erection of covered cattle kraals, two villages comprising some 65 acres of land have been contour bunded by the cultivators, and it is estimated that 350 Africans now make and apply farmyard manure to their fields.

Agricultural Officers have assisted in the lay-out and cropping of the prison farms established in Teso and the Central District to ensure that fertility is maintained by adopting from the outset a planned agriculture which includes the application of manure to the land and the resting of land under grass fallows. The effects of such demonstrations are slowly but surely spreading to the districts and in Bugwere several chiefs are adopting similar methods and are housing their cattle and making farmyard manure.

In Kigezi, the practice of contour hedging and strip cultivation is spreading and in the vicinity of Bukalasa a few Buganda farmers are contour bunding their fields.

Agricultural Surveys.

A summary of the 19 mutalla survey reports referred to in my report for 1936 is in the press. The Agricultural Survey Committee recommended that at least a hundred of these surveys should be undertaken as they provide most useful data on land settlement and population problems and on the various agricultural systems as practised in different types of country. Eighteen further surveys were done by Agricultural Officers during 1937.

Agricultural Shows.

At the invitation of the Director of Agriculture, Kenya, this Department staged an exhibit at the Agricultural Show held in Nairobi under the aegis of the Royal Agricultural and Horticultural Society of Kenya. The Uganda Cotton Association, the Uganda Planters' Association, the Uganda Tea Association, private individuals and the leading sugar, coffee and tobacco firms co-operated with the Department by providing produce, and their assistance is gratefully acknowledged.

Minor Economic Products.

BEESWAX.

The development of a beeswax industry makes but slow progress. The Department employs African instructors to teach improved methods of making beehives and extracting beeswax, and in some districts buys the small quantities of wax brought in. In the Western Province and Masaka District marketing is controlled under the Native Produce Marketing Ordinance. The total purchases amounted to half a ton.

WHEAT.

This crop remains a useful cash crop for the hillmen in the Toro District who marketed for local use 103 tons for which they received 5 to 5½ cents per lb.

Legislation.

The Plant Protection Ordinance, 1937, repeals and replaces the Diseases of Plants Prevention Ordinance. It is uniform with similar legislation introduced into Kenya and Tanganyika. The original legislation provided for a standing Central Plant Pest Board and for provincial Boards, whereas the new legislation now makes the Director of Agriculture responsible for the administration of the Ordinance.

The Cotton Ordinance has been amended so as to give Government power to fix dates after which cotton may not be planted. The purpose of this is to ensure the proper use of land under cotton cultivation. The provisions of the Ordinance relating to marketing have also been amended by making it an offence to store raw cotton, the sale of which is at the time unlawful. This remedies a defect which rendered it almost impossible to obtain a conviction against a buyer who purchased low grade cotton during the period in which the purchase of "good" raw cotton only is allowed.

Agricultural Education.

An account of the work performed by this section of the Department will be found in the report of the Senior Agricultural Officer (Education), and the extension work in connection with small holdings is described

in the reports of the senior officers in charge of Provinces which are also printed as Appendices. The training of Instructors and the short courses for Schoolmasters and Chiefs proceeded along the usual lines. A further eight students completed the five-year agricultural course at Makerere and were absorbed into the Department as African Agricultural Assistants. In order further to encourage students to take up this course, in particular candidates from districts other than Buganda, both Government and Native Administrations offered bursaries.

This Department welcomed the opportunity of meeting the members of the Commission of Higher Education in East Africa and of discussing with them our various educational problems and our need of trained African staff. We were also able to show them the work in progress at the Bukalasa Experiment Station.

Cotton Conference.

A conference of plant breeders and others interested in cotton improvement was held in November. The Empire Cotton Growing Corporation sent a strong delegation headed by Mr. F. R. Parnell of the Barberton Plant Breeding Station, South Africa, and including representatives from the Sudan, Nyasaland, Northern Rhodesia and Southern Rhodesia, while the Departments of Kenya and Tanganyika sent representatives from their staff engaged on cotton work. During the week available, the conference visited Bukalasa Experiment Station, which is the headquarters of our cotton breeding work, and the Serere Experiment Station, where they were able to see what is being done for the cotton crop in the short grass areas. Cotton variety trials and general cotton cultivations were inspected *en route*.

On completion of the tour the delegates re-assembled in Kampala for two days' discussion on the various problems common to all cotton growing countries, and a report on these proceedings will be published.

I would like to take this opportunity of thanking the Empire Cotton Growing Corporation for their support and for once more identifying themselves in such a practical manner with the cotton growing problem in East Africa.

Boards and Committees.

The first meeting of the East African Coffee Producers' Committee which was held in February was attended by the Director of Agriculture and two unofficial members nominated by the Uganda Coffee Board. A second meeting took place in August, the delegates visiting Lyamungu Research Station and Amani. As a result of discussions a joint programme for the extension and co-ordination of coffee research was formulated by the Director of Amani and the three Directors of Agriculture and unanimously agreed to by the Committee. The proposals are now under discussion by the Governments of Kenya, Tanganyika and Uganda.

Two meetings of the Uganda Coffee Board were held. Recommendations were made regarding the re-constitution of the Board and the placing of it on a statutory basis; the charges made for cleaning coffee by the licensed curing works and the policy to be adopted regarding an increase in the number of curing works.

The Tobacco Advisory Board met in February when the possibilities of extending the acreage under tobacco cultivation were discussed.

Visitors.

It is with great pleasure that I record the visit of Sir Frank Stockdale, K.C.M.G., C.B.E., Agricultural Adviser to the Secretary of State for the Colonies, whose stimulating report on the agricultural conditions in Uganda has been published.

Another visitor of note was Lord de la Warr, who in addition to his duties as Chairman of the Commission on Higher Education in East Africa, found time to interest himself and discuss many of the agricultural problems of Uganda.

In conclusion, I would like to express my sincere thanks to all those, non-officials and officials alike, who have co-operated with this Department and once again rendered great service to the agricultural development of the Protectorate.

J. D. TOTHILL,
Director of Agriculture.

AGRICULTURAL EDUCATION.

I. VOCATIONAL EDUCATION.

1. THE FIVE-YEAR COURSE IN AGRICULTURE HELD IN CONNECTION WITH MAKERERE COLLEGE.

As in previous years the third, fourth and fifth years of this course were given by the staff of this Department. The third year, which is mainly occupied in lectures and laboratory work, was held at the Agricultural Laboratories, Kampala, with the exception of classes in Surveying and Book-keeping which were held at Makerere College. The new entry of nine students consisted of four Banyoro, three Baganda, one Lango and one Kikuyu (from Kenya Colony). It is interesting to note that this is the first time since the course started in 1926 that the Baganda students have been in a minority. The syllabus of studies for this year of the course was overhauled and re-drafted at the beginning of the year in the light of past experience. Seven of the students passed at the end of the year.

The fourth-year class consisted of eleven students, including one from Kenya. The year was spent at the Bukalasa and Serere farms of the Department. Practical examinations were held in December. Eight of the students passed and three failed; of these three two have been recommended to take the fourth year of the course again, the third has been recommended not to proceed further with the course.

The fifth-year class consisted of nine students and was based partly on Serere and partly on Bukalasa. Eight of the students passed out successfully at the end of the year and obtained their certificates. The one failure has been given the opportunity of taking the fifth-year of the course again.

The eight successful students have been recommended for admission to the African Civil Service as African Agricultural Assistants.

When the Director of Education for Nyasaland was in this country at the beginning of the year arrangements were made for two students from the Livingstonia Mission of that country to be sent to Uganda for a year's training in agriculture. They arrived at the beginning of May and were attached to the fourth-year Makerere class at Bukalasa. They were transferred to Serere at the beginning of December for a further six months' training at that centre.

All expenses in connection with their visit are being paid by Nyasaland.

2. COURSES FOR CHIEFS.

Serere.—Sixty-nine chiefs from Budama and Teso attended, in relays during October and November, a short course of instruction in the maintenance of soil fertility and the dangers of, and methods of checking, soil erosion. The chiefs showed a very considerable interest in the work.

Bukalasa.—Seven gombolola and miruka chiefs from Ankole attended a course at Bukalasa during July and August.

Twenty-one chiefs from Buganda, Busoga and Bunyoro attended a course at Bukalasa from mid-October to mid-December.

These courses included instruction in the maintenance of soil fertility, methods of checking soil erosion, the planting of elephant grass for soil regeneration, the mulching and care of coffee, the making and application of farmyard manure, plot measurement and the planning of a small farm.

3. COURSES FOR AGRICULTURAL INSTRUCTORS.

Serere.—Nine instructors, working under the Department in Bugishu, Busoga, Lango and the West Nile District attended a two-months' course at Serere during March and April.

Twenty-nine instructors from Teso, Lango, Bugwere, Budama, Bugishu and Northern Busoga attended a refresher course at Serere for a month during August and September.

The course included instruction in plot measurement, the laying out of plots, the recognition of insect pests and the writing of reports.

At *Bukalasa*, thirty-four instructors from Buganda and the Western Province attended a six weeks' course during May and June.

Eight instructors from Buganda attended a two-months' course during October and November.

The instruction was kept as practical as possible and included lessons in the maintenance of soil fertility and methods of checking soil erosion, plot measurement and the laying out of plots.

On the whole there appears to be a marked increase in interest shown by pupils attending classes at Bukalasa and Serere.

4. SMALLHOLDERS' COURSES.

Bukalasa.—The two main holdings of 18 acres and 14 acres respectively were maintained and used for teaching purposes. The lay-out and cropping of these have been described in previous reports.

Four pupils completed the two-years' course in October and left to start their own holdings.

The crops obtained on the two holdings have been good and there are indications that the fertility of the soil has increased under the cultural methods and rotations followed. The 20 acre "mixed" holding showed a net profit on the year's working of Shs. 968 after allowing for the cost of labour and for depreciation of buildings, implements and tools.

Serere.—The teaching smallholdings consisted, as in previous years, of three twelve-acre holdings, two eight-acre holdings and one twenty-acre holding.

An average of eighteen pupils have been resident on the holdings. Six pupils completed their two-years' course and returned to their homes, one to Bugwere, two to Lango, two to Budama and one to Teso to start farming on their own. Five of the vacancies so formed have been filled by new entrants from Teso, four of whom come in a group from one gombolola.

The Mission smallholdings schemes at Namutamba and Gulu and the Native Administration smallholdings at Ngetta, which are modelled to a greater or less extent on the Bukalasa and Serere holdings, were visited and touch was kept with their activities.

II. AGRICULTURAL EDUCATION IN THE SCHOOLS.

A change was made in the organisation of school gardens. In place of the school garden having a large number of small plots each school now has a small number of large plots carrying the crops of the district and cropped according to the rotation recommended for the district by the Department of Agriculture. Arrangements were made for regular help and advice to be given to the schools by the Agricultural Officer of each district, and detailed instructions for each school were worked out with that officer on the spot, due regard being given to the prevention of soil erosion.

In connection with the regrading of the schools of the Protectorate, an agricultural syllabus for the Primary Certificate Course was drawn up after consultation with the Senior Agricultural Officers.

As in previous years short courses for schoolmasters were held at Bukalasa and Serere.

At *Bukalasa* a two-months' course for Middle schoolmasters and for Makerere College students who had just completed their teachers' course was held during January, February and March, and was attended by a class of fifteen.

Twenty-four teachers from Elementary Schools attended a two-months' course during July and August. This was an exceptionally keen class of teachers; the best, in fact, since these courses were started in 1930.

It is noticeable that the standard of Elementary school teachers attending the Bukalasa course during the last few years has been steadily improving.

At *Serere* a class of nineteen school teachers from Elementary schools in the Eastern and Northern Provinces attended a two-months' course during June and July.

AGRICULTURAL FILMS.

During February the Bantu Education Kinema Experiment operating by means of grants from the East African Governments, visited Bukalasa and made films of various educational subjects. A projection outfit was received in September, on the liquidation of the experiment, and has been stationed at Bukalasa, one of the senior African staff having been trained to operate it.

GENERAL.

During the visit of Sir Frank Stockdale, K.C.M.G., C.B.E., several matters in connection with agricultural education were discussed and his advice was obtained.

While on leave during October and November the writer was enabled, through the generosity of the Agricultural Missions Foundation of New York, to visit the United States of America for a month and to study their methods of agricultural education especially with regard to the education of negroes.

Thanks are due to the Director of Veterinary Services for his kindness in allowing his officers to lecture to many of the classes.

E. G. STAPLES,
Senior Agricultural Officer (Education).

AGRICULTURE IN THE BUGANDA AND WESTERN PROVINCES.

WEATHER CONDITIONS.

In the Buganda Province the first three months of the year were comparatively dry with the result that the bulk of the cotton crop was harvested in good condition. The rains in April, May and June were heavy and well distributed. July, August and the first half of September were extremely dry due to a narrow distribution of rainfall rather than to the amount of rain which actually fell. During this period planting was delayed and growth retarded. October and November, on the other hand, were exceptionally wet months. Serious damage to the early planted cotton was threatened if the wet weather continued but fortunately dry conditions set in during the second week in December.

Approximately the same conditions prevailed in the Western Province. In the Kigezi and Ankole districts the total rainfall was above normal and temperatures were lower than usual.

COTTON.

1936-37 CROP.

The following table shows the estimated acreage of cotton planted in each district of Buganda and the Western Provinces during 1936, and includes the corresponding sales (in tons seed cotton), the yield per acre, and the average prices paid for "Good" and "Stained" cotton per 100 lbs.

	1936-37 Acreage	Sales	Average Price		Yield per acre
			Good	Stained	
		Tons	Shs. cts.	Shs. cts.	Lbs.
BUGANDA PROVINCE—					
Mengo	611,253	69,971	14 31	4 03	256
Masaka	65,947	14,384	14 04	3 00	488
Mubende	37,139	4,527	13 75	3 13	273
TOTALS	714,339	88,882			
WESTERN PROVINCE—					
Toro	14,257	894	14 50	3 00	140

The above tonnage is equivalent to a total output of 149,321 bales of lint from the Buganda Province and 1,502 bales from the Toro district of the Western Province. In addition to this crop a trial cotton crop in the Ankole district yielded some 38 bales. This was marketed in August and September, 1937, and the growers obtained an average price of Shs. 8 for "Good" and Shs. 4 for "Stained". The relatively higher average price paid in the Toro district was due to the bulk of the cotton being marketed in the latter half of March and April when the price of lint had risen. In regard to the acreage figure for Mengo it should be noted that 61,971 acres were grown in Singo, a former county of the Mubende district.

Owing to the dry weather conditions at the beginning of the year the grade was good and the picking season a short one. The buying season opened on the 18th January at Shs. 14 per 100 lbs., in Mengo and

Masaka districts, seed being worth Shs. 55 per ton. Marketing proceeded steadily at prices ranging from Shs. 13 to Shs. 15 till early March, when there was a sudden rise to Shs. 18, and this high level was maintained until the end of the season. The rise came, unfortunately, too late to be of much advantage. In the Mubende-Toro zone tapered prices were paid based on the distances from railhead of ginneries and markets. The period for marketing "Good" raw cotton was extended to the 15th March after which there was only a little "Stained" cotton to be purchased at prices varying between Shs. 3/50 and Shs. 4/50.

1937-38 CROP.

The following tables show, (a) the estimated total plantings in 1937 in each district, and (b) the percentage monthly plantings:—

				Acreage 1937-38	Acreage 1936-37
BUGANDA PROVINCE—					
Mengo	..	..		793,731	611,253
Masaka	..	..		57,161	65,947
Mubende	..	..		27,782	37,139
TOTALS	..	..		878,674	714,339
WESTERN PROVINCE—					
Toro	..	..		12,738	14,257

PERCENTAGE OF COTTON PLANTED EACH MONTH.

				May	June	July	August	September
BUGANDA PROVINCE—								
Mengo	..	..		9.9	27.6	31.8	21.7	9.0
Masaka	..	..		31.2	20.5	33.2	11.1	4.0
Mubende	..	..		13.7	31.7	38.5	14.7	1.4
WESTERN PROVINCE—								
Toro	..	..		2.9	7.4	35.7	47.2	6.8

The above figures of acreages were estimated by means of the method utilised in previous years. They are based primarily on the Chiefs' returns and a factor for mean plot size is then applied. There is no doubt that the figure for Mengo is overestimated but it has been retained in order to have figures comparable with those of the preceding season.

With the increase in staff it will be possible in the future to make more thorough checks in the field of the Chiefs' returns. In addition to the above acreage some 50 tons seed were supplied to the Ankole district, where planting commenced in December.

Germination on the whole was good despite the fact that ideal planting conditions were limited. The growth of the early plantings was retarded during the dry weather in July and August and again accelerated too rapidly during the very wet period in October and November, with the result that these plants became too woody and infected with Blackarm disease. The July and later plantings benefited by the late rains and should give a normal yield. The dry weather which commenced in December was favourable for all growths and for harvesting. Other than Blackarm, which spread rapidly during the humid weather in October and November and which was checked again by the dry weather in December, diseases and pests were about normal in their incidence. Wilt, a disease which as yet has caused little damage, was more frequent and widespread

than hitherto. *Lygus*, *Helopeltis* and Bollworms were present but not serious. Crop prospects at the end of the year indicated a yield per acre slightly lower than in the preceding season but a slightly greater total crop in view of the increased acreage and a higher percentage of early plantings.

The growing of cotton is now an established practice and, in the case of Buganda, expansion is proceeding rapidly, and, in many cases, in advance of proper cultural methods. The growers still maintain the opinion that a large area of cotton must be planted in order to obtain satisfactory returns, whilst in fact the same returns could generally be obtained from one-half of the planted area provided that area was properly managed.

Their failure to appreciate the need for economy in effort and soil fertility is a difficult barrier to progress. It will be overcome in time by propaganda and education, but there remains a tremendous amount to be done before the position becomes satisfactory. It is gratifying to note this season a distinct improvement in two directions, namely, a higher percentage of early plantings, and closer spacing. It is hoped that this is a beginning in the right direction towards consolidation.

COTTON LEGISLATION.

There was no important amendment to the cotton laws. Singo county of Mubende district was amalgamated with Mengo district as from the 1st January, but it remains for this cotton season in the Mubende-Toro cotton zone.

COFFEE.

The planting of Robusta coffee is now encouraged in all districts of the Buganda and Western Provinces to the limit of the altitude where this crop can be grown with success. Arabica coffee growing is encouraged on the higher altitudes in the Kigezi and Toro districts. This policy, adopted in 1936, implies a gradual change-over from Arabica to Robusta cultivation in the Ankole district and on the lower altitudes in the Kigezi district, the main reason for the change being the heavy infestation of the *Antestia* bug on Arabica and the damage it causes to this crop in the Western Province.

The growers are supplied with free seedlings from nurseries maintained by the local Native Administration and by the Department. Seed is provided for the nurseries from selected trees in the case of Robusta of the *Nganda* type. The coffee is marketed under the auspices of the Native Produce Marketing Ordinance, except in a part of the Toro district where as yet the crop is sufficiently small for it to be purchased under Produce Dealers' Licences. Prior to export the coffee must be processed at one of the licensed curing works and pass inspection by the Coffee Grading Inspector.

Coffee planting by Africans proceeded steadily, and the weather on the whole was favourable to the crop. In the Western Province there was an appreciable improvement in the standard of upkeep of the plots, mulching being more generally practised. In Buganda the number of cement drying floors constructed by individual coffee growers for drying their own coffee increased from 79 to 152.

The response to propaganda in favour of improved methods in the field was more encouraging than in previous years though little enough was accomplished. In the Buganda Province especially, where so little is done to conserve soil fertility, a few of the more intelligent peasants and

a small number of Growers' Societies were persuaded to mulch their coffee and to pick and dry the crop in a proper manner. A "Growers' Society" is a group of members who combine to assist each other in constructing cement floors, and who agree after full discussion to carry out a definite programme of work in a given period, such as mulching and pruning at the right time, etc. Such societies are encouraged so long as discussion at meetings is confined to improved methods of farming on the members' own land, and on the understanding that good work is actually being done in the field.

The preparation of coffee for sale differs in the two Provinces. In the Western Province the coffee is hulled in a mortar, or with a locally made wooden huller, whereas in the Buganda Province most of the crop is sun-dried in the cherry and sold as such, the product being known in the trade as *kiboko*. In practice the production of *kiboko* is preferable as the crop is properly processed at the curing works and a more uniform grade of hulled coffee is thus obtained. The main drawback to *kiboko* is the difficulty of ascertaining at the time of purchase whether the whole parcel has been properly picked. In Buganda there is room for considerable improvement as regards picking of ripe cherry only, as much immature coffee is picked through lack of attention on the part of the owner and the ignorance of the immigrant labourer.

Marketing and curing of native grown coffee proceeded on much the same lines as in 1936 and were a reasonable success. The periodical inspection of markets caused a certain improvement in the quality of the crop but until the last quarter of the year the quality regulations in respect of wet coffee were often evaded by a few unscrupulous buyers who purchased wet coffee between visits of inspection.

Towards the end of the year the main exporters of coffee agreed to refuse to purchase wet coffee from middlemen, and this evasion of the regulations was effectively stopped.

The prices offered in Kampala remained fairly steady from January to July at the following rates per lb.:—

				Cents.
Robusta— <i>Kiboko</i>	..	..	..	9-10
Hulled	..	..	..	18-20
Arabica— <i>Kiboko</i>	..	..	..	10-11
Hulled	..	..	..	28-30

By the end of September there was a drop of 3 cents per lb. Prices rallied slightly in October but fell again rapidly in November and December at the rate of over 2 cents per lb. each month. At the end of the year the following prices were being paid:—

				Cents.
Robusta— <i>Kiboko</i>	..	..	..	4½
Hulled	..	..	..	9
Arabica— <i>Kiboko</i>	..	..	..	8-10
Hulled	..	..	..	16-18

Coffee grown in the Western Province commanded, as usual, a premium of one cent per lb. over and above the rates offered for Buganda-grown coffee in Kampala.

The final collapse of the market was due to a reduction in the export tax in Brazil, equivalent to some £7 per ton.

Nine coffee hulleries were licensed under the Hulling of Coffee Ordinance, three in the Masaka and six in the Mengo district. These hulleries were frequently inspected in the course of the year and most of the owners

had to be warned at one time or another against hulling wet coffee. By December, however, every hullery was turning out a very good grade of coffee, in some cases higher than the "F.A.Q." standard.

The Coffee Grading Inspector examined 118,560 bags of coffee at the curing works. Of these 2,248 were rejected. The quantities of coffee exported by the curing works were as follows, in tons:—

Robusta "F.A.Q."	Arabica "F.A.Q."	Undergrade and Triage	Total
Tons	Tons	Tons	Tons
8,890	856	511	10,257

Towards the end of the year the exporters who own curing works desired that the grade of their own Robusta "F.A.Q." should be raised. Under the Coffee Grading Rules the number of defective beans allowed in Robusta "F.A.Q." is 12%. By a voluntary arrangement these exporters now grade their coffee to a maximum of 10% defectives. This makes an appreciable difference in the general appearance of the coffee, and this grade should in time command a higher premium.

Progress in coffee cultivation in the various districts is reviewed in the following notes:—

KIGEZI DISTRICT.

The nurseries were maintained as in the previous year and 782,450 Arabica and 51,766 Robusta seedlings were issued to growers. The total acreage under coffee in this district is estimated at 3,650 acres Arabica and 200 acres Robusta. Sales were 99 tons Arabica compared with 82 tons in 1936.

The *Antestia* bug again caused considerable damage to the Arabica coffee. The pest spread into new areas in Ndorwa county, and at the end of the year only Bufumbiro county was entirely free. Control measures such as hand picking of the bug and stumping of old trees have to-date had little apparent effect.

ANKOLE DISTRICT.

The acreage under Arabica was increased by 331 acres to the estimated total of 4,500 acres. Four nurseries were stocked with *Nganda* seedlings following the policy of substituting Robusta for Arabica.

Sales were 184 tons, some 7 tons less than in the previous year. The crop again suffered severely from the ravages of the *Antestia* bug.

TORO DISTRICT.

The total acreage of native grown coffee in Toro is estimated at 821 acres under Arabica and 1,970 acres under Robusta; that is an increase of 155 acres under Arabica, the acreage under Robusta remaining stationary. Sales amounted to 45 tons Arabica and 222 tons Robusta.

In Bwamba, where Robusta is grown, the licence held by the exclusive licensee, which expired on the 30th June, was renewed for a further period of three years. This system of marketing under an exclusive licence has proved very satisfactory. The growers take a keen interest in the crop, mulching being almost universal and pruning carried out efficiently. A new road from Fort Portal to this county is under construction which, when completed, will be of great convenience for the marketing of the produce in this area.

BUGANDA PROVINCE.

Twenty-three central coffee nurseries are now maintained in the Province with funds provided by the Buganda Government, an increase of three over the previous year. From these nurseries 749,536 seedlings of *Nganda* coffee were distributed to growers. In addition to these some 20,000 seedlings were distributed from gombolola nurseries in the Mubende district. The acreage under coffee in Buganda is estimated at 27,456 acres Robusta and 3,320 acres Arabica. This estimate is very approximate as it is impossible to obtain accurate returns of the number of coffee trees in cultivation. The same also applies to returns of purchases. Under the present system of marketing, buyers are obliged to submit monthly returns of purchases, but as the system has been working for a comparatively short period the buyers' returns have not yet reached the standard of reliability. From the returns of coffee treated at the curing works it is estimated that Buganda produced about 9,000 tons Robusta. The production of Arabica coffee in this Province is very small, probably 100 tons, as the growing of this crop is not being encouraged and old plantings are rapidly dying out or being replaced by the Robusta type.

TOBACCO.

ANKOLE DISTRICT.

The cultivation of tobacco on an economic scale was started in the Ankole district in 1936. Sites were selected in Bunyaruguru and Igara counties, close to the Mbarara-Fort Portal road, and a total area of 300 acres was planted from September to November, 1936. As the leaf was to be air-cured the variety White Burley was used, seed being obtained from Nyasaland. Growth was most satisfactory in Bunyaruguru, but in Igara the crop did not do so well on the highly acid soils. The incidence of a Mosaic disease also reduced the yield in Igara. The crop was harvested from January until early March and marketed from April to June, 1937. The total yield amounted to 63,693 lbs. consisting of 39,140 lbs. grade I and 24,553 lbs. grade II. The crop was purchased by Mr. D. N. Stafford at the price of 20 cents per lb. for grade I and 10 cents per lb. for grade II, Shs. 10,094/30 being paid to the growers. Compensation to the amount of Shs. 2,000 was provided by Government for those who received only small or no remuneration from their tobacco, owing to disease, hail or fire, and in addition a number of free *luvalo* commutation tickets were issued by the Native Administration.

This crop, which was in the nature of an experiment, proved that tobacco can be grown satisfactorily on a large scale in parts of the Ankole district and that it is a source of revenue to the inhabitants. The greatest drawback is the scarcity of timber close at hand for the erection of barns or as fuel for the fire-curing varieties.

In 1937 it was decided to grow a fire-cured variety in Ankole, the necessary fuel to be imported by Government. The two counties of Igara and Bunyaruguru were again chosen, but more numerous and smaller sites were selected for the convenience of growers in view of their experience with the previous crop. The variety "Western" was used and 371 acres were planted between the 27th August and the 10th October. Growth was most satisfactory in Bunyaruguru but varied in Igara according to the different climatic and soil conditions, and the exposure of the sites. Unfortunately, Mosaic disease has again made its appearance and is causing considerable damage to the crop. No control measures are possible to deal with this disease in the field and it is feared that it will reduce the yield by one-third.

The future of tobacco growing in Ankole will depend, in relation to the demand, on the extent of the continued incidence of the disease and of the provisions which can be made for the supply of fuel. The growers have made a determined effort in all areas to give the tobacco crop the necessary attention, priming, topping and de-suckering being efficiently carried out. The success of a second cash crop in this district would be of great convenience to the growers to enable them to develop their own land in preference to working elsewhere.

TORO DISTRICT.

Trial plots of tobacco were grown by a few Africans in the gombololas of Katoke and Kyenjojo in Mwenge county. In both places the *Amorello* variety was used and the leaf was air-cured. The best plots gave an equivalent yield of from 320 to 753 lbs. of cured leaf per acre. The quality of the leaf was very satisfactory.

KIGEZI DISTRICT.

Trial plots of air-cured tobacco planted at four representative centres in 1936 were harvested. Yields were satisfactory, but almost the whole crop at each place was ruined from the viewpoint of quality by a disease known as "frog-eye leaf-spot". The quality of the few leaves which escaped the disease was good, they being strong in texture and suitable as wrapper.

WHEAT.

TORO DISTRICT.

Wheat is grown to a small extent at altitudes of 5,000 to 7,000 feet, mainly by Baconjo, in the counties of Burahya, Bunyangabo and Busongora. The area planted was 937 acres or approximately the same as in the previous year. Markets are arranged for the convenience of growers who bring their crop for sale on specified dates. Some 103 tons of wheat were marketed in this manner at a price of 5 to 5½ cents per lb. This crop, grown on a small scale to meet a local demand, is a good source of revenue for the local inhabitants at present prices. Expansion beyond this stage is not contemplated in view of the well established industry in Kenya. The policy of the Department in this direction is to improve the quality of the crop by the introduction of new varieties. Trials are now in progress to test varieties received from Kenya. Three of the varieties being tested are promising.

TEA.

The plots of seed bearing trees at Buwunga (Masaka district) and Kakumiro (Mubende district) were maintained. There was no demand for seed from these plots as the growers who are permitted to plant tea under the Tea Restriction Scheme were able to obtain their requirements of seed elsewhere.

The five quarter-acre observation plots in the Kigezi district were maintained and pruned for plucking. Growth has been slow in this area.

BEE SWAX.

This commodity was marketed under the Native Produce Marketing Ordinance in the districts of Toro, Ankole, Kigezi and Masaka. One dealer obtained an exclusive buying licence for each district, the Department fixing the minimum prices to be paid to producers. This industry is progressing slowly in the Kigezi and Toro districts, but little interest is evident elsewhere in spite of propaganda. Prices ranged from 72 to 85 cents per lb., and purchases by the licensee were 1,152 lbs. In addition to this quantity 235 lbs. were purchased by members of the Department in Mengo district.

FOOD CROPS.

In general food supplies were adequate in both Provinces. There were slight shortages in certain localities as the result of the dry spell which retarded the growth of plantains and which delayed the planting and the subsequent harvesting of the autumn crops. The heavy rains in October and November, however, were very favourable and good yields were obtained. In view of the possibility of famine in 1938 a special effort was made to encourage the growers to plant larger areas of sweet potatoes and cassava as a reserve. There was a satisfactory response to this appeal.

LOCUSTS.

Swarms of the Red Locust (*Nomadacris septemfasciata*) visited every district in the two Provinces but the infestation was not serious. Eggs were laid in small areas in the Mubende, Masaka, Toro and Ankole districts in the first quarter, and in Mengo, Toro and Ankole districts in the last quarter. The hoppers were effectively wiped out by the local inhabitants. Comparatively little damage was done by either hoppers or flying swarms. The incidence of hoppers was highest in Bulemezi and Buruli counties in Mengo, and in this area a number of cotton plots were partially destroyed before the cessation of the rains which made it impossible to carry out circular burning.

NOTES ON EXPERIMENT AND DEMONSTRATION FARMS.

KAWANDA (MENGO DISTRICT).

The main work on this farm comprised measures taken to improve soil fertility and to prevent soil erosion now and in the future. The land was cleared of *lumbugu* (*Digitaria scalarum*) in so far as possible and afterwards planted with elephant grass (*Pennisetum purpureum*). Almost the whole area was bunded at proper intervals, and gullies were filled in to prevent erosion. Planting of trees in the swamp was also continued and by the end of the year 22 acres of *Cassia* and *Eucalyptus* spp. had been planted. The coffee area was extended by five acres with selections made by the Botanist. A small orchard was also started with selected or budded fruit trees. The building of the laboratory and dwelling houses by a private contractor was commenced. The labour supply was insufficient during the latter half of the year, due to the demand for labour in Kampala and elsewhere. Wages were increased from Shs. 10 to Shs. 12 per month.

KYEMBOGO (TORO DISTRICT).

A comprehensive soil survey of the farm was completed. The area earmarked for the more immediate tea experiments was bunded against erosion and planted with a cover crop. The drainage of the swamp was continued and trees were planted for timber supply.

KACHWEKANO (KIGEZI DISTRICT).

The work of opening up this farm was begun in June. As sheep are to be the principal enterprise, a large part of the farm has been divided into paddocks which are marked off by hedges. The opportunity is being taken of using these for trials of a number of likely hedging species. A store, a dipping tank, and a hygienic watering pool were constructed. The purchase of stock locally began in November and 100 ewes and 8 head of cattle were obtained by the end of the year. Rotational grazing is being practised. A movable boma is in use for the sheep and a permanent one has been built for the cattle. If the ewes survive under open range management it is proposed to cross them with woolled rams. A small

area is to be maintained under cultivation for tobacco and coffee trials, and for seed increase of introduced crops. A model bee-keeping unit of 12 hives has been set up on the farm.

MUKONO (KYAGWE COUNTY).

This small farm is maintained with funds provided by the Buganda Government. It comprises a large coffee nursery, a two-acre plot of *Nganda* and *Robusta* coffee selections, and a cotton variety trial.

Seed of the *Nganda* selections is supplied to the nurseries in the Province.

AGRICULTURAL EDUCATION.

Four smallholders, trained for two years at Bukalasa, received in 1935 and 1936 a loan of Shs. 100 each from the Buganda Government to establish their holdings. Of the two who started in 1935, one has turned out to be a failure. The other worked exceptionally well until early 1937 when owing to insecurity of tenure he lost interest in his holding; at the end of the year, however, he obtained an agreement securing him the use of his land for a fixed period and he has started work afresh. Of the two who commenced in 1936, one is under notice to quit his holding and is seeking another site, the other is doing well on his own land. An additional loan of Shs. 100 was granted to a pupil from the Namutamba Farm School which is run by the Church Missionary Society. It is hoped that four of the five will be able to repay the loan within the given period of five years and the fifth may be persuaded to start afresh. The main obstacle to success is the difficulty of obtaining security of tenure. The landowners are chary of leasing land for a definite period, even to relatives, and it is only natural in these circumstances for tenants to become disheartened when things go wrong.

The Agricultural Officers visited the several schools in their districts and gave many talks on agriculture to the pupils. They also assisted in the laying out of new school gardens and in the setting of examinations.

NON-NATIVE AGRICULTURE.

Tapping of rubber continued. There was a general reduction in yields on estates where tapping was resumed three years ago due to yields becoming normal after a flush period following an enforced rest. Prices fell from 11½d. for standard smoked sheets to approximately 6½d., but recovered towards the end of the year to slightly over 7d.

Non-native grown *Robusta* of "Type 70" fell in price from £30 10s. per ton *f.o.r.* to approximately £20 per ton, in sympathy with the Brazilian situation. The *Robusta* estates were maintained. In the Toro district the *Arabica* estates are being gradually abandoned or replanted with tea.

Tea planting under the Tea Restriction Scheme continued and growth was most satisfactory.

D. STEDMAN DAVIES,

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Appendix III.

EASTERN PROVINCE.

The year saw the largest production of cotton yet recorded in all districts of the Eastern Province except Budama, where the crop was only slightly less than the previous highest one during the 1932/33 season.

Higher prices were paid for cotton than for some years past and the average income per taxpayer from the sale of seed cotton was very satisfactory.

Prices of other crops also maintained a higher level during the first half of the year, although they tended to drop considerably towards the end.

Native growers responded well to the necessity for planting larger reserves of food crops than usual in view of the possibility of the recurrence of the ten yearly famine period.

The scarcity of manual labour was most marked at Serere Experiment Station and elsewhere, due to disinclination of Africans to work after the prosperous cotton season.

METEOROLOGICAL NOTES.

Rainfall records for various stations throughout the Province are given below, together with their deviation from normal:—

(i) District	(ii) Station	(iii) Rainfall in inches	(iv) Average Rainfall	(v) Difference from normal
Teso	Serere ..	59·97	54·34	+ 5·63
	Ngora ..	56·13	50·40	+ 5·73
	Katakwi ..	42·91	45·10	— 2·19
Bugwere	Mbale ..	60·65	44·72	+15·93
	Kibale ..	61·69	53·74	+ 9·95
Budama	Mulanda ..	59·93	53·55	+ 6·38
Bugishu	Bubulu ..	47·08	41·82	+ 5·26
	Bugusege ..	63·23	57·66	+ 5·57
Busoga	Jinja ..	43·60	44·01	— 0·41
	Vukula ..	53·24	47·67	+ 5·57
	Bugaya ..	59·12	47·46	+11·66

NOTE.—The average rainfall (column (iv)) is for periods of five years and upwards.

After the unusual distribution of rainfall in the years 1935 and 1936, rains were more normal but were recorded in greater quantity at nearly all stations, notably at Mbale where the rainfall was the highest recorded since 1920.

A dry spell occurred during the latter part of August and throughout September, but November was notable for its extremely heavy rainfall throughout the Province.

The incidence of hail was greater than usual. Quarterly hail records, including the estimated damage done to crops, are now kept in all districts.

COTTON.

MARKETING OF THE 1936-37 COTTON CROP.

With the object of inducing a more regular flow of cotton to the buying centres, and to facilitate storage accommodation at both ginneries and markets, the opening date for the cotton buying season was put forward to 14th December, 1936, for all districts in the Province except Busoga, where buying commenced on the 4th January, 1937. This was some five weeks earlier than the date fixed for the preceding season. While it is true that the earlier opening date probably resulted in less attention being paid by growers to the picking over of their crop, the main objects for advancing the date were nevertheless achieved, and the earlier date was appreciated by ginners and growers alike.

The following tables give details of the 1936-37 cotton crop, together with figures for the previous season for comparison:—

TABLE A.

District	Estimated acreage		Sales in tons		Yield per acre	
	1935-36	1936-37	1935-36	1936-37	1935-36	1936-37
Teso	116,812	150,878	16,217	18,395	(lbs.) 311	(lbs.) 273
Bugwere ..	127,658	133,286	11,929	15,706	209	264
Budama ..	74,083	80,714	7,381	8,705	223	242
Bugishu ..	44,019	47,043	3,246	4,440	165	211
Busoga ..	205,408	188,032	42,271	40,524	461	483
TOTALS ..	567,980	599,953	81,044	87,770	..	..

TABLE B (1936-37 SEASON).

District	Average prices paid for 100 lbs. seed cotton			Average income from sale of cotton per taxpayer
	A	B	C	
	Shs. cts.	Shs. cts.	Shs. cts.	Shs. cts.
Teso	12 23	8 88	3 42	71 00
Bugwere ..	12 98	10 00	3 81	121 90
Budama ..	13 17	..	4 01	85 04
Bugishu ..	13 07	..	3 85	34 67*
Busoga ..	13 43	9 50	4 77	126 71

* This figure is based on the total population of Bugishu district, and so does not convey a true picture of the average income of cotton growers only, as a high proportion of hillsmen grow no cotton at all.

NOTE.—Bugishu and Bugwere now Central district.

With the exception of Bugwere district marketing proceeded steadily, but quietly. In Bugwere, there was brisk selling from the start, until rains late in December slowed things up.

By the end of January, 1937, about three-quarters of the crop had been sold in each district, except in Busoga where buying started three weeks later.

Cotton seed requisitions were issued in all districts before the end of January, 1937. They were based on a larger scale than usual, *viz.*, on an allowance of 20 lbs. of seed per acre planted during the previous year plus a reserve of 50 %. In Teso and Bugwere districts distribution was completed during April and had commenced in the other districts. Reserves were drawn on in July. It was necessary in the case of a few ginneries in Busoga district to arrange for supplies of seed from surrounding ginneries owing to poor viability of the local seed. Germination on the whole, however, was very good. April planting was smaller than usual owing to the necessity for planting sufficient reserves of food crops. Weather conditions were good for May planting, and Budama district showed a record acreage for this month. In June rainfall was on the light side and planting was held up to some extent. The largest monthly acreage was planted in July when conditions were good with the exception of parts of Busoga and Budama districts. The rains continued during the first two weeks of August by which time the bulk of the crop had been planted. The latter half of August and September was dry and hot. Normal rains fell during October, but November was a very wet month, and it was feared that Blackarm would increase and threaten the prospects of a very promising crop. The disease did not spread as much as had been feared, however, except in North Teso, while the November rains were of great benefit to the later plantings. December was drier than usual, and crop prospects improved.

At the end of the year indications pointed to heavy yields, with the possibility of record crops being harvested in Bugwere, Budama and Busoga districts.

PESTS AND DISEASES, 1937-38 CROP.

During July, considerable damage to the growing plants was done by *Lygus* in Bugwere and Teso districts and to a less degree in other districts. During September, however, this pest decreased in numbers very rapidly.

Helopeltis occurred to a much smaller extent than usual. In one isolated area of Bugwere district it diminished yields very appreciably, but apart from this small outbreak damage was negligible.

Other pests were present in small quantities but caused less damage than usual.

Blackarm was severe in parts of North Teso, and depressed yields. Elsewhere it gave no cause for anxiety.

The comparative good health of the crop is attributed largely to the dry spell which occurred during August and September.

COFFEE.

(a) Arabica Coffee in Bugishu District.

GENERAL NOTES ON ACREAGE, CULTIVATION AND PESTS.

The same method of distribution of plants was adopted as in previous years, that is, seed was grown in a small number of central nurseries and the young plants later transplanted into beds at each gombolola.

The number of trees given out to growers is shown below:—

County					Trees issued
South Bugishu	..	..	..	..	477,390
North Bugishu	..	..	..	..	336,740
Central Bugishu	..	..	..	..	68,400
Sebei	..	..	..	..	147,300
TOTAL	..	..	..	..	1,029,830

The total area under coffee was thus increased by 851 acres. Distribution took place during good weather conditions, and the number of deaths at planting-out time was less than usual.

The general standard of cultivation leaves a great deal to be desired, more especially at low elevations where cotton is often grown in addition to coffee. Attention to cotton and food crops absorbs a great deal of the growers' time with the result that coffee plots are frequently left in a very overgrown condition and mulching is not attended to. In the denser coffee growing gombololas a shortage of banana leaf mulch is another difficulty. Growers are advised to cultivate their plots at the end of the year and mulch as heavily as possible. A second mulching should be carried out without cultivation at some convenient time in the middle of the year, and when this is done properly the necessity for weeding hardly arises. This system is, of course, dependent on adequate supplies of mulching material and where these are not available alternate row mulching is advocated.

A multiple stem system of pruning is advocated at all elevations but pruning tends to be badly neglected. Growers are reluctant to remove the lower primaries, which operation is essential to the formation of vigorous suckers to take the place of the older stems which are later cut out. Topping of the trees, however, which gave considerable trouble during 1936, has now been discontinued almost everywhere.

Biennial fluctuation and overbearing are important factors at low elevations. In 1936-37 the crop was small over most of the district and trees came through the dry season in fairly good condition. Flowering was extremely profuse and a tremendous crop of cherry was the result. Rainfall was adequate until August, 1937, but as early as June the coffee trees began to suffer from the combined effects of over-bearing and bad cultivation. By August, die-back was becoming severe, and the dry spell of September and October left many of the trees in a pitiful state.

It must not be forgotten that the low prices of 1936 were a great discouragement to Bagishu coffee growers, but the question whether the expansion of the area under coffee is proceeding too rapidly deserves consideration. Except in Central Bugishu and one or two gombololas in South Bugishu and Sebei there is still a very keen demand for young trees, but whether it is wise to continue issuing them to people who show so little inclination to look after them properly is doubtful.

DISEASES AND PESTS.

Heavy losses occurred in Bugishu from the incidence of pests, of which by far the most important was *Antestia*. During May, the bug was noticed in greatly increased numbers, and as the year advanced a heavy infestation developed throughout the coffee at low elevations. The Buluchekke valley suffered most but great damage was also done in the lower parts of North Bugishu. So far this pest has not been reported from the higher elevations except for specimens which have been noticed in Sebei and halfway between Bumasifwa and Butandiga. Smoking and hand-picking were demonstrated in the affected areas, but met with little response from the owners of plots.

The serious increase of this pest was clearly illustrated by the fact that Kilindini mills were obliged to augment their charges for treatment owing to the higher number of *Antestia* damaged beans. A greater proportion of the lower grades was also turned out at the Bubulu factory and the percentage loss in milling was larger than in previous years.

Stephanoderes was prevalent in parts of the Manafwa and Siroko valleys at the lowest elevations.

Apate and other stem borers caused a certain amount of damage in South and Central Bugishu.

Hemileia vastatrix was widespread on low elevation coffee and was usually found in association with die-back and leaf fall. "Hot and Cold" disease was noticed in a large plot of coffee at the top of Bukigai hill which rises out of the Manafwa valley.

Soil erosion is playing an increasingly important part in reducing yields. Trees may be seen in all parts of the district with their roots exposed owing to the disappearance of the top soil. This is due in some of the denser areas to the fact that the supply of banana leaves is no longer adequate; the planting of strips of elephant grass along the contours in such areas is advocated. It is evident that more discrimination between good and bad cultivators must be exercised in future at distribution time, and serious consideration will be given during the coming year to the question of suspending the issue of plants altogether in those areas where cultivation has been most neglected.

MARKETING OF THE 1936-37 SEASON'S CROP.

The total crop for the season (1st July, 1936, to 30th June, 1937) was 1,321 tons of parchment coffee as compared with 2,034 tons during the previous season. The whole of Bugishu, Bugwere and Budama districts became a closed area under the Native Produce Marketing Ordinance in August, 1936. The Bugishu Coffee Scheme purchased cherry and parchment coffee in South and Central Bugishu and in the North Bugishu hills. Parchment only was bought by the three licensed firms in the low elevation areas of North Bugishu.

Of the total crop of 1,321 tons, 250 tons were purchased in cherry and 1,071 tons in parchment. On account of the small purchases in cherry, the pulping stations did not work to their full capacity, but the general running of these stations by African clerks showed a decided improvement over the previous year. The quality of native prepared parchment was again unsatisfactory and after being cleaned this coffee realised £5 per ton less than coffee prepared from cherry purchased by the Bugishu Coffee Scheme. The Bugishu Coffee Scheme's final accounts for the season showed a very satisfactory trading profit.

THE 1937-38 MARKETING SEASON.

It was decided that the Bugishu Coffee Scheme should confine its marketing activities to Central and South Bugishu only. Marketing in North Bugishu, both on the hills and at the low elevations, was placed in the hands of the same three exporting firms who had been licensed to buy during the previous season. Nine of the ten pulping stations in North Bugishu (the remaining one was closed down) were leased to these firms. Both cherry and parchment were thus bought throughout the whole of the district. The two drying centres at Simu and Nampanga in North Bugishu were also leased to the firms.

Buying commenced in August, a flat rate which was fixed weekly by Government being paid throughout the district. Satisfactory prices, averaging between Shs. 3 and Shs. 3/38 per "debe" of parchment and Sh. 1 to Sh. 1/29 per "debe" of cherry were paid until the end of October. The change in the Brazilian coffee policy during the early part of November caused a sudden reduction in prices which fell as low as Shs. 2/16 and cents 77 respectively for parchment and cherry during December.

In South Bugishu the bulk of the crop was purchased as cherry, but the natives of Central Bugishu continued to show a preference for pulping their own coffee and selling in parchment. On account of this and of

labour difficulties, it was found necessary to close down the Central Bugishu pulping stations as the season advanced. In South Bugishu the purchasing and handling of the crop proceeded smoothly, though it was necessary to restrict purchases of cherry for a short time at the peak period to avoid too great an accumulation of wet coffee. Drying facilities at Bubulu factory were inadequate, and a considerable quantity of partially dried parchment from South Bugishu had to be sent to Kilindini for milling. The Central Bugishu crop was dried at Bunkoko and milled at Kilindini as usual.

In North Bugishu although only approximately 28% of the crop was purchased in cherry, great difficulty was experienced by the firms in drying the parchment during the busiest buying period, as there were frequent showers of rain and the hours of sunshine were few. In addition, coffee purchased in parchment had to be further subjected to drying. This resulted in considerable difficulty at the two drying centres. The Scheme purchased (to the 31st December, 1937) approximately 71% of the crop in South and Central Bugishu as cherry.

With the object of improving the general grade of native prepared parchment, a graded parchment market was held once a week at Buluchekke in South Bugishu, 40 cents extra per "debe" being paid for grade "A" parchment. Twenty per cent. of the total purchases at this market consisted of grade "A" coffee, the parchment being practically as good as that prepared by the Scheme from their cherry purchases. The results were very encouraging and it is hoped to give this a more extended trial next year.

Selling arrangements were in the hands of the same London firms that marketed the crop for the Bugishu Coffee Scheme the previous year.

Good prices were obtained for the earlier picked crop, especially for the lower grades, for which there was a keen demand. The reduction of the export tax in Brazil, however, seriously affected sales, and a loss on the year's working is inevitable.

The total purchases in tons to the end of 1937 are shown below:—

(a) BUGISHU COFFEE SCHEME (SOUTH AND CENTRAL BUGISHU).

	July	August	Sept.	Oct.	Nov.	Dec.	Total
Cherry ..	..	84.4	148.0	239.0	82.3	26.0	579.7
Parchment ..	..	20.1	48.1	97.7	43.1	27.2	236.2
	..	104.5	196.1	336.7	125.4	53.2	815.9

(b) LICENSEES (NORTH BUGISHU).

Cherry ..	..	10.1	43.7	104.3	63.7	35.8	257.6
Parchment ..	4.8	14.3	62.9	260.4	156.4	168.3	667.1
	4.8	24.4	106.6	364.7	220.1	204.1	924.7
Grand Totals	4.8	128.9	302.7	701.4	345.5	257.3	1,740.6

It is estimated that the total crop for the 1937–38 season will reach 2,000 tons.

(b) Robusta Coffee.

In Busoga district six nurseries are maintained for distribution of the spreading variety of Robusta (*Nganda* type) in Southern Busoga. A new nursery was established at Buwunga gombolola of Bukoli county.

The total number of plants issued from these nurseries was 16,030. Around Iganga, where the main interest in coffee growing has always been shown, plants were taken principally by existing plot owners, and few new growers applied for plants.

Returns show that approximately two tons of unhulled coffee were purchased, mainly during May. Home consumption and local barter are still the main objects of coffee growing amongst the Basoga, and the popularity of this crop at present does not approach that shown in Buganda Province.

Four demonstration plots of Robusta coffee are maintained in the district to encourage the use of elephant grass as mulch.

In Budama district four small trial plots of Robusta coffee are in existence in Samia county and Mulanda gombolola. Two of these were planted in the early rains of 1937. Observations on growth and yields will be included in Part II of this Report.

OIL SEEDS.

GROUNDNUTS.

This crop is grown as a native food crop throughout the Province, but only in Teso and Bugwere districts is production so far sufficiently large to provide a surplus for sale and export.

The following table shows the estimated acreage and sales with 1936 figures for comparison:—

District	1937 Acreage	Sales—Tons		1936 Acreage	Sales—Tons	
		Shelled	Unshelled		Shelled	Unshelled
Teso	38,940	244	5	55,917	1,146	62
Bugwere ..	7,848	26	5	7,568	197	20
Budama ..	4,155	11	7	3,340	42	..
Busoga ..	15,321	76	..	13,220	?	?

Bugishu district is not included, as plantings are small and no surplus is available for sale.

The main reason for the small amount sold in comparison with 1936 is to be found in the very satisfactory income from the 1936–37 cotton crop which was obtained by growers. As money was plentiful, growers preferred not to sell, more especially as prices were lower than the previous year. In Bukedea county of Bugwere district a shortage of food early in 1937 reduced the amount for sale very considerably. The likelihood of 1938 being a year of general food shortage also affected sales throughout the Province. The Teso crop was bought, as in previous years, by the sole licensee. In Bugwere district, 32 licences were taken out under the Native Produce Marketing Ordinance, 12 licences in Budama district and 13 licences in Busoga district. Good yields were obtained in North Teso, but Rosette disease caused a heavy drop in yields in South Teso during June. Yields were poor in Bugwere and Budama districts owing to excessive rainfall.

Prices in Teso district averaged only 4½ cents to 5 cents per lb. of shelled nuts, as against 7 cents and 8 cents per lb. in 1936.

SIMSIM.

In Teso district the acreage under this crop increased by 7,000 acres to 24,320 acres. The yield was average, but the quality of the product marketed not always satisfactory.

As with groundnuts, only a small proportion of the crop was sold, the total sales being 388 tons as against 552 tons in 1936. Prices averaged between 7 cents and 8 cents per lb.

In Bugwere and Budama districts no definite marketing arrangements were made for the sale of the crop. Yields were above average.

SHEA BUTTER NUTS.

For the first time for some years, these nuts found a small sale in Teso district. 53 tons were sold to a local soap making factory at Soroti at an average price of 3 cents per lb. The possibility of using the residual cake for manurial purposes was considered, but on analysis it was found that it was very low in nitrogen.

FOOD CROPS.

Except in Bukedea county of Bugwere district, no definite shortage of food supplies occurred. In this area it was necessary to issue 60 lbs. of millet (*wimbi*) to all old people and children from the gombolola granary reserves. In addition, all people were made to plant a plot of sweet potatoes or cassava before cotton planting was allowed to commence. The partial failure of the late rains in 1936 was responsible for this scarcity of food.

In view of the likelihood of a general food shortage at the end of 1937 or in 1938, energetic propaganda was instituted to ensure adequate food supplies, and the response of the growers was good. Root crops in particular were planted in largely increased acreages. Weather conditions on the whole favoured the growth of all food crops, and abundant rains in November were most helpful. The following notes for each district summarise the position.

TESO DISTRICT.

Very good crops of both large and small millet (*mtama* and *wimbi*) were harvested. An increased acreage of sweet potatoes was planted in case the later rains should fail. At the end of the year there was a good supply of food held and there should be no shortage of food before the next crops are harvested.

BUGWERE DISTRICT.

Mention has already been made of the partial shortage of food in Bukedea county. With the exception of this area, and parts of Pallisa county, the yield of millets was very good. There are large reserves of cassava planted, and the position as regards food reserves is stronger than for some years past.

BUDAMA DISTRICT.

There were signs of slight food shortage in the vicinity of Nagongera in the first quarter of the year owing to failure of the previous year's late rains. Harvesting of the small millet crop soon remedied the position.

There are large reserves of cassava which are much used as a resting period crop in Budama district. A very satisfactory acreage under sweet potatoes and beans was planted.

BUGISHU DISTRICT.

There was a substantial increase in the acreage planted under large and small millets. Yields were good, and supplies are satisfactory.

Both sweet potatoes and cassava show an increase in acreage planted over 1936. A dry spell in September and October rather retarded growth, but the cassava reserves may be considered to be very satisfactory.

BUSOGA DISTRICT.

A local seasonal shortage of food was felt in two gombololas in North Busoga during April. This, however, was not serious. Increased planting of all food crops is reported.

PLOUGHING.

The number of ploughs in use throughout the Province increased from 20,752 to 23,638, the increase taking place almost entirely in Teso district and in Pallisa county of Bugwere district.

Ploughing competitions were held in Bukedea county of Bugwere district, and at Kuju, Kanyum, Soroti, and Serere in Teso district. A high standard of work was shown at these competitions which attracted great interest. Instruction to owners of ploughs by African staff continued, and a slight improvement in the general use of ploughs can be reported.

Nevertheless, the main object of owners is still to plough over a plot as quickly as possible, the soil being merely scratched in places and the weed cover not properly turned in. Ploughing down sloping land on the lighter types of soil usually met with in ploughing areas increases the danger of erosion, and this is checked whenever possible.

AGRICULTURAL EDUCATION.

Apart from propaganda in each district by Agricultural Officers, Serere Experiment Station remained the centre of training, and an Agricultural Officer (Education) was stationed there in charge of the courses for Chiefs, Schoolmasters and Agricultural Instructors. Six smallholdings of various sizes were maintained at Serere, and 6 fourth-year and 4 fifth-year Makerere students did one of their two years of practical training on the station.

The short courses for Chiefs can be regarded as very successful. The selected Chiefs usually show a great interest in what they see and learn, and although a large proportion of them do not put into practice what they have learnt on their return to their districts, the course undoubtedly makes them more interested in agricultural matters. The courses for schoolmasters help them considerably in their teaching, and the instructors' courses are kept as practical as possible, emphasis being placed on such points as plot measurement, identification of pests, and anti-erosion methods.

DISTRICT SMALLHOLDERS.

After a two years' course of training at Serere or Bukalasa, more smallholders returned to their homes to farm. In most cases, however, these boys failed to produce the standard of work and enthusiasm that might have been expected.

Demonstration smallholdings were maintained at Nakaloke in Bugwere district and Wanyange and Iganga in Busoga district. Costing figures were kept on the Wanyange holding. The Nakaloke holding, which is in good condition, and which should prove a profitable farm for the occupier, was refused by two trained smallholders in succession and has had to be maintained with paid porters.

FERTILITY AND ANTI-EROSION WORK.

A great deal of progress was made, mainly in Teso district, and the work done can be summarised under the following heads:—

- (a) Prison farms.
- (b) Covered cattle kraals and the production of farmyard manure.
- (c) Bunding of native plots.
- (d) General propaganda.

(a) PRISON FARMS.

These have been successfully established at six county headquarters in Teso district. A local committee consisting of officers of the Administration, Veterinary, Agricultural and Medical Departments was formed to advise on the running of these farms. Messrs. East African Ginneries and Foster Brothers have kindly promised prizes to the value of Shs. 600 for the best run farms, the prizes to be given to those Africans responsible for the work done on the farms. Each farm is run on an eight-year rotation which includes four years resting under grass. Bunding, proper spacing of crops, correct ploughing and manuring are demonstrated on each. In addition, wind breaks of *Cassia siamea* have been planted, also various fruit trees to supply fresh fruit for the prisoners.

In Bugwere district, prison farms were commenced at Bukedea and Kamuge. These are cropped on a six-year rotation. In view of the proposed Provincial Prison in this district, the site for which was surveyed, cattle kraals on the prison farms were not started.

(b) COVERED CATTLE KRAALS.

The existing covered kraals in Teso district made in 1936 were maintained, and increased yields were obtained from all crops to which manure was applied. These act as valuable demonstration centres for cattle owners.

It is estimated that about 350 Africans used cattle manure made in open kraals. Interest is spreading as it is realised that increased crop yields are obtained, but kraal owners are still mostly too lazy to make use of the manure.

The two covered cattle kraals in Bukedea county of Bugwere district were continued, and the manure used with advantage on the owners' holdings. A new one was under construction at Kachumbala at the end of 1937, and it is hoped to give assistance in the erection of one for the county Chief of Bukedea.

The supply of suitable timber is the great obstacle at present to the building of more of this type of kraal. It is hoped, however, that mud pillared buildings will overcome this difficulty to a certain extent, although the cost of building is naturally considerably increased. Mud pillared kraals are being experimented with both in Teso and Bugwere districts.

(c) BUNDING.

The Agricultural Officer, Teso, continued the work of bunding in native plots. Fifteen acres of narrow based bunds planted with elephant grass on the ridges have been made at Rappayi gombolola and about fifty acres of plots in Gweri gombolola were bunded for those who wished to have it done. The Bateso are becoming more interested and it is hoped to extend this work considerably during 1938.

(d) GENERAL PROPAGANDA.

Special emphasis is placed whenever possible on the dangers of soil erosion, and measures to combat it. This subject is stressed at all courses held at Serere.

A party of fifteen Chiefs and instructors from Teso district were taken during June to Mwanza and Ukara Island in the Tanganyika Territory by the Agricultural Officer. The purpose of the visit was to demonstrate how depleted a country can become through uncontrolled grazing, burning and over cultivation, and the methods that have been devised by the Wakara with signal success to restore the fertility of their island after the soil had been nearly ruined.

GENERAL NOTES.

(a) LOCUSTS.

Flying swarms of Red Locusts appeared in Busoga district from North Buganda during September. They continued their south-easterly flight into Budama district and on into Kenya. Eggs were laid, shortly after their appearance, in most gombololas of Budama district, and in the uninhabited sleeping sickness areas close to the Nile in Busoga district. Energetic measures were taken in Budama where egg-laying took place mainly in short grass or cotton plots. These measures resulted in the destruction of the hopper bands before any appreciable damage was done.

In Busoga district, the inaccessible nature of the country where egg-laying occurred rendered control impossible in most cases, and hopper bands of large size marched eastwards through the thickly populated areas around Kamuli and Iganga. Great local damage to cotton and food crops took place, the locusts being omnivorous but showing a preference for grasses, cotton and plantains. At the end of the year, all had reached the winged stage, but no definite direction of flight was shown.

(b) MITALA SURVEYS.

Two surveys were made in Teso district and one each in Budama, Bugishu and Busoga districts.

(c) LINT SAMPLING.

This was carried out as in previous years. Sampling was done in all cotton growing districts about the end of January, and sets of sample boxes were made up by the Committee from eight representative areas.

N. S. HAIG,

Senior Agricultural Officer, i/c Eastern Province.

NORTHERN PROVINCE.

1. METEOROLOGICAL.

A noteworthy feature of the season was the early onset of the rains in the northern districts of the Province. This enabled an earlier start than usual to be made in the planting of all crops in West Nile, Madi, and Acholi. The total rainfall in these districts was above average, that in the West Nile being much above.

In Lango there was a shortage of rain during the first four months of the year but subsequently, except for a short period during September, the rainfall was adequate. The total rainfall was slightly below average. In Bunyoro weather conditions during the first half of the year were fairly normal. During the remainder of the year rainfall was somewhat erratic, June and August being very dry and September and October excessively wet. The total rainfall was about average.

In all districts hot dry conditions intervened in December to the great advantage of the ripening cotton crop. The season on the whole was not an unfavourable one.

2. COTTON.

This report deals in part with two cotton crops, *viz.*, the marketing of the 1936-37 crop and the growing period of the 1937-38 crop.

1936-37 CROP.

The opening of the buying season in the Northern Province was gazetted for the 14th December, 1936, but the buyers, with the approval of Government, agreed to postpone it till the 4th January, 1937. The prescribed period during which good raw cotton only might be marketed ended on the 25th January, 1937, but it was subsequently extended to the 8th February. Marketing was completed in April.

Buying opened at prices ranging from Shs. 12 to Shs. 12/50 and proceeded steadily at these levels, or a little below, until a sudden rise in the market in March caused prices to soar. The peak of this rise occurred on the 18th March when the day's price ranged from Shs. 16/50 in West Acholi and Bunyoro to Shs. 17 in Lango, East Acholi, West Nile and Madi. Prices thereafter never fell below Shs. 15 in any district of the Province during the remainder of the season.

The period of high prices occurred after the greater part of the clean cotton had been marketed and growers therefore failed to benefit to the same extent as they might otherwise have done had the rise occurred earlier. The average prices obtained by growers were nevertheless very good, being considerably higher than in 1935-36. The prices obtained varied from an average for 1st quality of Shs. 12/17 in West Nile to Shs. 13/64 in East Acholi, and for 2nd quality from Shs. 3/04 in Bunyoro to Shs. 4/50 in East Acholi.

The early promise (*vide* Report for 1936) of the 1936-37 crop was not entirely fulfilled. Yields obtained in many cases were disappointingly small, the high price obtained by growers resulted in the failure of many to harvest the whole of their crop and production declined somewhat in all districts. Details of production by districts are set out in the following tables.

(a) QUANTITIES PURCHASED, 1936-37, AND PRICES PAID.

District	Purchases in Tons			Average Prices	
	A	B	Total	A	B
Lango	9,036	831	9,867	Sh. cts. 13 32	Sh. cts. 3 74
Bunyoro	2,450	352	2,802	12 35	3 04
Acholi—Gulu	2,052	286	2,338	13 20	4 16
Chua	2,553	118	2,671	13 64	4 50
Madi	635	120	755	12 41	4 29
West Nile	1,154	240	1,394	12 17	3 78
TOTALS	17,880	1,947	19,827	..	..

(b) PRODUCTION IN 1936-37 COMPARED WITH THAT OF PREVIOUS SEASONS.

District	Production in Tons			
	1937	1936	1935	1934
Lango	9,867	10,121	9,651	11,161
Bunyoro	2,802	2,953	2,695	2,740
Acholi—Gulu	2,338	3,110	4,040	2,515
Chua	2,671	3,828	2,617	1,716
Madi	755	855	1,162	813
West Nile	1,394	1,726	1,210	543
TOTALS	19,827	22,593	21,375	19,488

The average yields per acre obtained were: Lango 260·7 lbs., Bunyoro 261 lbs., West Acholi (Gulu) 230·2 lbs., East Acholi (Chua) 236·9 lbs., Madi 298·2 lbs., and West Nile 267 lbs.

The quality of the cotton generally throughout the Province was good, as was the grade. Lint from Lango and the West Nile was very favourably reported upon in this respect by the Lint Samples Committee, Jinja.

1937-38 CROP.

Plantings, 1937.—The total acreage planted exceeded that of 1936 by 20,085 acres. Details of the distribution by districts of the crop together with the acreage figures of previous years for comparison are set out in the following table:—

District	Acreages			
	1937	1936	1935	1934
Lango	102,296	84,784	90,689	78,440
Bunyoro	18,876	24,016	24,626	28,000
West Acholi	20,297	22,750	22,200	16,500
East Acholi	32,025	25,259	24,000	21,107
West Nile	15,772	11,700	10,800	7,137
Madi	5,000	5,672	5,500	5,300
TOTALS	194,266	174,181	177,815	156,484

Mainly as the result of an intensive propaganda campaign carried out early in the year before planting began, but partly attributable also to the abnormally early onset of the rains, a much greater proportion than usual of the crop was got in early in all districts of the Province.

There was also a marked improvement in spacing in Lango and the West Nile.

It is a well known fact that in a normal year the best yields in the Northern Province are obtained from early-sown cotton. Somewhat unfortunately, considering the high proportion of the crop that was got in early, the 1937 season has been far from normal. As the year progressed it became evident that the earlier plantings, particularly those at the closer spacings, were at a disadvantage during the excessively wet conditions experienced in October and November. Many of the early sown plots became overgrown and Blackarm took heavy toll at this stage.

Cotton sown from the beginning of July onwards, however, benefited greatly from those conditions, and with the onset of drier weather and more sunshine in November all but the very earliest sown (April and May) cotton made a good recovery. By mid-December yields above average, in the case of Lango and East Acholi well above average, appeared probable in all districts.

Harvesting of 1937-38 Crop.—Hot dry conditions in December following a long wet spell caused large quantities of cotton to open suddenly and in many areas growers were hard put to it to keep pace with picking.

Coincident with this sudden flush of ripe cotton in December the news began to get about among the growers that prices in 1938 were to be low and many growers on that account adopted a "wait and see" policy, with the result that by the end of December picking was greatly in arrears in many areas.

Since then propaganda has been undertaken in all districts with a view to inducing growers to pick. A considerable degree of success has attended these efforts, particularly in Bunyoro, Lango and the West Nile, but unpicked cotton is expected to be a factor adversely affecting production in all districts, notably so in the West Acholi where the people have proved more than ordinarily unwilling to accept advice.

3. TOBACCO.

BUNYORO DISTRICT.

There was a slight increase in the acreage under tobacco, the total area planted being 7,758 plots estimated at 2,418 acres against 7,464 plots or 2,390 acres in 1936.

Failure of water supplies in March led to the loss of several nurseries in Buruli and Kibanda counties, but on the whole weather conditions throughout the season were very favourable for the crop which was again free from serious disease or pests.

Hail did considerable damage early in July. The area most severely affected was the Waki valley where some 100 acres of excellent tobacco almost ready for harvest were totally destroyed.

Marketing.—Buying commenced on the 1st September and was practically completed by the third week in October. Marketing was carried out with more expedition than in previous years. Buying took place at every market within one month of the opening date, and as a result no grower was compelled to hold his cured leaf for any length of time before being given an opportunity to dispose of it.

Seven buying licences were issued for the purchase of native grown tobacco in Bunyoro.

Production which amounted to 1,326,105 lbs., exceeded that of 1936 by 313,811 lbs. The quality of the crop was above average and both growers and buyers expressed satisfaction. The proportions of grade I and grade II were 56·88% and 43·12% respectively.

Prices paid were 27 cents for grade I and 17 cents for grade II, and as in previous years licensees were required to pay a cess of 3 cents per lb. on all tobacco purchased.

The average price obtained by growers over the whole crop was 23 cents per lb. which compares favourably with an average of 22 cents per lb. obtained in 1936. The total cash value of the crop, exclusive of compensation paid for fire and hail damage, was Shs. 300,787/04. This represents an increase of Shs. 76,314/16 on last year when the cash value of the crop to growers amounted to Shs. 224,472/88.

Hail and fire compensation was paid during October. Payments for hail damage amounted to Shs. 8,788 and for fire to Shs. 418/50. Payments were made at the rate of Shs. 18 for total loss, Shs. 13/50 for 75% damage, Shs. 9 for 50% and Shs. 4/50 for 25% damage.

During the past two seasons there have been fewer barn fires.

WEST NILE DISTRICT.

The acreage planted was estimated at 1,500 acres. This compares with 775 acres in 1936 (791 acres, 1935; 350 acres, 1934). The number of growers was 3,236 and the mean plot size 0·46 acre.

Beds were sown from the beginning of February onwards and good germination resulted at all centres except Adumini in Vurra county where lack of attention to watering was the cause of repeated failures.

Inadequate rainfall in late April and early May occasioned some difficulty at planting-out time and was the cause of poor stands particularly in Kobboko county, which still remains the largest tobacco producing area in the district. Planting-out was completed in all areas, except Vurra, by the end of May. In Vurra county planting of air-cured varieties was completed in mid-June and of fire-cured varieties by the end of July.

Varieties.—*Amorello* for air-curing occupied 1,385 acres or 92·3% of the total acreage. Blue Pryor and Western occupied 65 acres and 50 acres respectively. Harvesting commenced towards the end of June and continued throughout July. Excessive rain during August, coupled with the usual trouble of over-crowding of leaf in the barns, favoured the spread of mildew, to attack of which air-cured tobacco is particularly susceptible, and losses at this period must have been considerable.

Harvesting of the air-cured tobacco in Vurra county took place during August and of the fire-cured during October.

Marketing.—Buying of the crop commenced on the 20th August and was practically complete in the main tobacco areas of Kobboko and Terego counties by the end of September. The air-cured tobacco in Vurra county was marketed in October and the fire-cured tobacco in December.

Three buying licences were issued for the purchase of this tobacco.

Although the average yield per acre obtained, *viz.*, 185·3 lbs., is below the average obtained in the district over the past six years (224·8 lbs. per acre) this is to a large extent attributable to the very large influx of new and therefore unskilled growers and is not regarded in any way as discouraging. The total production, *viz.*, 277,885 lbs., approximates very closely to that of 1936 when 287,662 lbs. were obtained,

and, by reason of the fact that a larger proportion than usual of the crop was purchased as grade I, the cash value of the crop to growers was higher than in 1936 (1936, Shs. 58,779: 1937, Shs. 60,020).

Both growers and buyers expressed satisfaction, the former with the cash returns they received and the latter with the quality of the crop.

Prices paid were, as in 1936, at the rate of 26 cents and 16 cents for grade I and grade II respectively, with a cess of 3 cents per lb. payable by the purchaser as in Bunyoro. The average price per lb. obtained by growers was 21.60 cents compared with 20.43 cents in 1936.

Hail and fire damage in respect of 24½ acres and amounting to Shs. 754 was paid in the West Nile.

TOBACCO PACKING FACTORY, MASINDI.

1936 Crop.—Packing of the 1936 crop was completed during the first week of February, 1937. The total amount packed during the season was 679,457 lbs. (packed weight).

1937 Crop.—The factory opened for the reception of leaf on the 2nd September, 1937. Packing was completed for the season and the factory closed down on the 24th December, 1937.

The quantity passed through the factory was 667,357 lbs. (packed weight). An inclusive charge of 1.34 cents per lb. for baling and storage at the factory was made as in 1936.

The comparative figures for amounts packed, cost per lb., etc., for the past few years are appended in tabular form:—

Season			Amount packed Lbs.	Revenue Shs.	Expenditure* Shs.	Cost Cents per Lb.
1932-33	..	..	105,900	1,897/40	1,580/08	1.492
1933-34	..	..	112,492	2,008/75	1,681/66	1.495
1934-35	..	..	644,117	8,626/60	5,408/42	0.840
1935-36	..	..	549,649	7,181/17	4,672/98	0.855
1936-37	..	..	679,457	9,356/67	4,772/81	0.703

* Figures do not include wages of management, maintenance of plant, etc., but represent cost of labour and a few maintenance items only.

Certain minor improvements were carried out at the factory, notably the lengthening and narrowing of the drying-room furnaces, which has resulted in a considerable saving of fuel, and the substitution of two wood and hessian steaming boxes for two of the old type brick steaming cupboards. These boxes, which use a mixture of steam and air, give indications of being more economical of steam than the old type which employ steam only. The nature of the recent season was so favourable to packing, however, that the new boxes did not receive a fair trial and opinion regarding them must be reserved.

4. COFFEE.

The cultivation of coffee in the Province is confined to Bunyoro and the West Nile. A count of coffee trees in Bunyoro made in November shows a total of 603 acres under Robusta, of which approximately 400 acres consist of trees under three years old.

The total area under Arabica in Bunyoro at present is estimated to amount to 13 acres only.

The break in prices towards the end of the year has shaken the growers' faith in this crop, which possibly owing to the failure of so many European estates has never been very popular in Bunyoro, and it is probable that a fair acreage will be abandoned during the next few months if prices do not improve. A large part of the native grown coffee produced in Bunyoro goes to Kampala for sale and no figures for production are available. A fair portion of the crop is prepared for chewing purposes and sold in small packages in the native markets. The price obtained for this "prepared" coffee works out at roughly 45 cents per lb.

Three nurseries have been kept up in Bunyoro, one at Ikoba, one at Kyabigambire, and one at Hoima.

The total number of seedlings distributed from the three nurseries was 12,666.

In the West Nile the area under Arabica increased by 190 plots or 63 acres. The total acreage in the district is now estimated to be 181 acres. Of this approximately 59 acres, planted in 1934 and 1935, are in bearing.

Marketing of the small initial crop, which was sold by tender, took place at Warr on the 20th April and at Payida on the 21st April. Prices per lb. were, dry cherry 10 cents, parchment 15 cents and clean coffee 18 cents.

The total quantity marketed was 6,083 lbs., of which 4,350 lbs. was clean coffee and 1,652 lbs. parchment, and the total cash disbursement in respect of the crop was Shs. 1,038.

It is estimated that the 1938 crop will be in the region of 15,000 lbs. clean coffee or its equivalent.

The future of Arabica coffee in the southern highlands area of the West Nile is somewhat difficult to forecast at the present stage. Given even a modicum of attention the trees appear to do remarkably well in the initial stages but indications are not lacking that a less happy phase is entered upon at about the fourth or fifth year of the life of the tree. Growers are also proving very obdurate in the matter of mulching, a factor for which the short sparse nature of the local herbage and the consequent high expenditure of labour entailed in collecting the necessary materials is no doubt in part responsible. The question of shade also presents a pressing problem. On the other hand, the crop is being grown in an area in which there is no alternative economic crop available and from which all who wished to earn money were hitherto compelled by circumstance to emigrate in search of employment.

Assuming that like other parts of Uganda in which the crop is grown the West Nile is a marginal area for Arabica coffee the project is still probably worth proceeding with, though it is at present regarded as unlikely that the cultivation will attain to great dimensions or prove as lucrative as the cultivation of cotton and tobacco in other parts of the district.

There are several observation plots of Robusta coffee at lower altitudes in the West Nile and Madi. These plots are entirely for purposes of observation: no conclusions have so far been drawn from them and the crop has not yet been introduced to African cultivators.

5. OIL SEEDS.

GROUNDNUTS.

The crop is grown almost exclusively for food in the Northern Province. Considerable quantities change hands in the native markets but there is at present little or no surplus over local requirements and, with the exception

of Madi where a very small quantity (5 tons 327 lbs. at 3 cents) found its way to market; no groundnuts were exported.

In Lango, approximately 50 tons of unshelled nuts were issued to Africans for seed purposes. Seed increase plots were planted by the Lango Native Administration at 192 centres and a total of 74 tons unshelled nuts were returned for distribution as seed during 1938.

SESAME.

Acreages under this crop increased slightly in Bunyoro and considerably in Lango. The acreage planted in the latter district is estimated to exceed that of 1936 by 8,481.

Yields obtained were well above average in the West Nile, Madi and Acholi and about average in Bunyoro. In Lango the yield from the early crop (main crop) was below average but very heavy yields were obtained from the late crop in North Lango.

The quantities marketed showed increases in all districts except Lango where sales fell considerably below last year's record figure of 1,005 tons but were nevertheless still slightly above average for the district. Details of the quantities marketed are as follows:—

District						1937 Tons	1936 Tons
Lango*	..	..	..	..	..	631	1,005
Bunyoro*	..	..	..	..	..	134	89
West Acholi—Gulu†	..	..	..	..	..	254.3	235
East Acholi—Chua†	..	..	..	..	..	270.4	(No details)
West Nile	..	..	..	..	..	146.5	100.5
Madi	..	..	..	..	..	5.8	(No details)

* Returns to end of November.

† Returns to end of September.

Prices paid ranged from 5 cents per lb. in Madi to 8 cents per lb. in Bunyoro. Prices on the whole were slightly lower than in 1936 except in West Nile where the price paid was 7 cents as compared with 5 cents in 1936.

In all districts sesame is a popular article of diet. The quantities marketed represent a very small proportion of the whole, by far the greater part of the crop being retained by the growers for food.

MAIZE.

This crop is becoming increasingly popular in parts of Bunyoro, notably Bujenje county, all parts of which are within easy reach of Masindi town, where it is largely grown on old tobacco plots during the late rains. In Bujenje county maize appears to be taking the place of cotton to some extent.

The demand for maize by local planters and ginners for feeding labour has continued and although no figures relating to sales or production are available there is every reason to believe that considerable quantities were marketed. The local price varies from Shs. 6 to Shs. 8 per bag of 200 lbs.

6. FOOD CROPS AND FOOD POSITION.

The year was an eminently satisfactory one from the point of view of food production. With the exception of the Bugungu area in Bunyoro, which took some time to recover from the effects of a local drought

experienced at the latter end of 1936, and some minor temporary local shortages in West Madi and in the lake-shore area of Lango, notably Alomet gombolola, there were adequate supplies of food in all parts of the Province.

There was a considerable increase of the area under sweet potatoes and cassava in all districts, notably in Lango and the West Nile. Famine reserves at gombolola headquarters have been augmented wherever possible. At the end of the year the food position generally is satisfactory.

7. PESTS AND DISEASES.

LOCUSTS.

Flying swarms of *Nomadacris* were reported from Acholi and Bunyoro districts in April and May and from West Nile, Madi, Acholi and Bunyoro districts in June. In no case was extensive damage done to crops.

A second visitation occurred in August and early September when large flying swarms were reported from Bunyoro. In this case also little damage to crops was reported.

BLACKARM.

The incidence of this diseases was somewhat above normal in all districts of the Province, except, possibly, in Bunyoro. Very wet conditions in October favoured the spread but drier weather later checked it and the crop made a good recovery.

DYSDERCUS.

As usual these were common by the end of the year but the incidence was about average, if anything possibly slightly below average, in all districts.

PINK BOLLWORM.

This continues to spread south and east in Lango into Kumam. A heavy infestation of Pink Bollworm occurred at Panyamur in the southern extremity of the West Nile district, where it is estimated that it will greatly reduce the yield in the small area affected.

SWEET POTATO BORER.

The incidence of this pest is reported to be less than average in Lango. In parts of West Madi it occasioned total loss of the sweet potato crop in some areas.

COTTON WILT.

One case of wilt was reported from Aduku in Lango.

8. PLOUGHING.

Lango remains the only district in the Northern Province in which ploughs are used to any extent by African cultivators. The number of ploughs in use in the district at the end of the year was 2,006 as against 1,162 in 1936.

The standard of ploughing remains very low; it is proving difficult to teach the Lango to become efficient drivers. The demand for the service of the Ploughing Instructors in the main ploughing period, March to July, far exceeds the supply. 1,708 men and 2,301 oxen were given training.

9. GULU FARM SCHOOL.

The farm school continues to make satisfactory progress.

Five new holdings for married couples were completed and the number in training at the end of the year was 29, of whom 10 were married men and 19 unmarried.

Other improvements carried out were (a) the provision of a large open cattle boma in which out-going pupils, some time before they leave the school, keep the oxen they have purchased for training, (b) the provision of a paid cook and a communal kitchen for the unmarried men, and (c) provision of an improved water supply.

Excellent crops of groundnuts, sim-sim, wimbi and sweet potatoes were reaped on all holdings but the cotton crop, which suffered from heavy rains in December, was less satisfactory. The cattle on all holdings remained free from disease.

At the annual general meeting of the Gulu Farm School Advisory Board held in November it was decided, *inter alia* (a) that the school should be made self-supporting in the matter of work-oxen, to which end the purchase of 13 cows and heifers necessary to bring the total breeding stock up to 30 cows and 1 bull was approved, and (b) that groups of applicants from one area or clan group rather than individuals should be selected in future and that preference in all cases should be given to married applicants.

10. SHOWS AND EXHIBITIONS.

Following upon the very successful Lango Health Show held at Lira from the 18th to 24th November, 1936, and serving to press home various lessons taught on that occasion a Lango Stock and Agricultural Produce Competition was held at Lira on the 2nd October.

As a preliminary, County Shows were held at each saza headquarters during September. Judging was carried out by the Agricultural Officer, Lango, and the Veterinary Officer, Lango. Prizes were given for the best exhibits.

The winners in each county and their exhibits were brought to Lira and a committee consisting of the Provincial Commissioner, the District Commissioner, Lango, and the Agricultural Officer, Lango, judged the exhibits, which were numerous and varied.

At each county competition and at Lira the notice of the people was drawn to the best collections of foodstuffs and the advantages of a varied diet were pointed out to them. Throughout the competition much interest was shown by the chiefs who, in most cases, had taken great trouble in collecting and arranging their exhibits.

11. EXPERIMENTS.

These will be dealt with in Part II of this Report.

12. AGRICULTURAL SURVEYS.

Three agricultural surveys were carried out, one in Akere gombolola of Kalaki county (Lango), one in Chiawante gombolola of Kwania county (Lango) and one in Aloropi wakilate of Offude county (West Nile).

13. MISCELLANEOUS.

BEESWAX.

An instructor was posted to the West Nile in the latter part of 1937, and since then has been occupied in teaching Agricultural Instructors various methods of hive construction and beeswax extraction.

14. CONCLUSIONS.

The year has been on the whole a good one for agriculture.

Apart from transient local shortages in one or two small areas food supplies have been ample for all purposes and the carry-over is adequate to meet all immediate requirements.

All crops, including economic crops, have, with minor local exceptions such as in the case of the sweet potato crop in Madi, been remarkably free from pests or diseases. Flying locusts visited various districts for a short period but did not damage crops extensively.

Although the acreage of cotton was approximately the same as in 1936 production declined by some 2,766 tons.

This decline in production, however, was more than offset by the very much higher prices obtained and growers considered the year a most profitable one.

In the case of the tobacco crop production exceeded that of 1936 by a comfortable margin in Bunyoro. In both Bunyoro and West Nile a much larger proportion than usual of the crop was classified as grade I. This led to growers obtaining correspondingly higher average prices per lb. for their produce and was a source of considerable satisfaction to them.

The quantities of tobacco purchased on eight out of the ten licences issued exceeded the amount expected on the acreage allocations. In the present state of the market this was no doubt a source of satisfaction to the licensees concerned. The quality of the crop, which was above average, was favourably commented upon by buyers.

There has been no perceptible alteration in the system of farming practised by the mass of the people but there was a marked improvement in one or two aspects of crop husbandry. The need for a more adequate and better water supply in many areas remains a crying need. Means of augmenting the natural resources of trees for building tobacco barns and for fuel in Bunyoro and West Nile are under consideration.

T. McEWEN,
Agricultural Officer, Masindi.

Appendix V.

Statement of Revenue and Expenditure.

DEPARTMENTAL EXPENDITURE—							£
Personal Emoluments	..	..	..	..	..	..	39,091
Other Charges	..	..	..	..	..	..	17,375
SPECIAL EXPENDITURE—							£
Special Investigation in connection with Pink Bollworm	..						55
Compensation to Natives; Extension and Establishment of							
Experiment Stations	..	..	..	..	..	..	1
Anti-Malarial Measures	..	..	..	..	..	..	87
Development of Animal Husbandry	..	..	..	..	..	..	55
Buildings and Equipment, etc.	..	..	..	..	..	..	598
Preparation of "Agricultural Review"	..	..	..	..	..	..	5
Nairobi Agricultural Show	..	..	..	..	..	..	75
							876
							57,342
Less re-imbursement by the Empire Cotton Growing Corporation							
towards the upkeep of Kawanda Seed Farm	..				..	..	800
							56,542
REVENUE DIRECTLY DERIVED FROM AGRICULTURAL SOURCES—							£
Cotton Tax	..	..	..	..	..	..	133,192
Licences to Purchase, Store, Gin, and Bale Cotton, etc.	..	..				..	13,327
Sale of Crops, Plants, etc.	..	..	..	..	..	..	807
Tobacco Baling Charges	..	..	..	..	..	..	590
Fees—Smallholders Courses	..	..	..	..	..	..	51
Export and Sale of Trial Consignments	..	..	..	..	..	..	50
Licences, Coffee Curing Works	..	..	..	..	..	..	21
EXCISE DUTIES—							
Tobacco and Cigarettes	..	..	..	..	..	..	69,600
Sugar	..	..	..	..	..	..	11,072
Tea	..	..	..	..	..	..	2,800

Appendix VI.

the Uganda Protectorate.

		POSITION IN 1937 COMPARED WITH 1936.			
36	1937	Increase		Decrease	
£	£	Quantity	£	Quantity	£
161	704	1,457	543	..	..
1,991	2,914	68	923	..	..
2,583	1,209	..	..	781	1,374
1,158	420,483	29,264	39,325	..	..
779	1,002	2,104	223	..	..
1,127	123,516	46,191	33,389	..	..
1,087	7,727	626	3,640	..	..
624	4,962	..	4,338	..	..
1,941	40,677	198,614	15,736	..	..
1,743	3,784	12,170	2,041	..	..
3,058	4,343	..	..	61,442	3,715
1,637	6,247	13,944	1,610	..	..
1,028	76,633	..	..	66	3,395
3,879	4,269,283	68,174	942,404	..	..
1,159	18,564	..	..	574	10,595
3,180	392,083	17,678	128,903	..	..
1,227	14,017	..	..	425	5,210
3,668	1,623	..	..	1,330	17,045
1,911	84,313	2,670	39,402	..	..
1,192	30,724	5,239	16,532	..	..
1,724	33,042	..	2,318	121	..
3,372	27,435	5	8,063	..	..
1,405	4,387	..	2,982	..	..
1,085	557	..	..	3,373	528
2,207	7,794	..	5,587	..	..
1,527	124,713	4,865	30,186	..	..
3,453	5,702,736	..	1,278,145	..	41,862

Appendix VII.

Production, 1937.

Ground-nuts	Cassava	Tobacco	Wheat	Rice	Chillies	Peas	Miscellaneous.
31,000	95,000	..	..	..	268	600	10,000
15,290	19,155	300	4	5	10	..	70
5,600	10,000	200	10	..	12	500	1,000
51,890	124,155	500	14	5	290	1,100	11,070
15,318	10,074	35	400	..	..	6	..
4,155	28,098	6	..	722	..	..	..
8,716	24,013	..	..	399	..	1	4,144
916	16,474	94	..	..	..	131	7,458
38,940	27,434	..	..	300	..	..	..
500	10	500	..	..	..	..	..
68,545	106,103	635	400	1,421	..	138	11,602
7,272	20,677	120	..	240	20	67,442	200
1,225	20,000	2,418	..	1	..	5,000	1,350
8,014	15,615	116	..	247	..	..	16,200
3,500	6,000	250	..	130	..	..	20
7,511	38,569	1,500	..	98	..	10,506	..
27,522	100,861	4,404	..	716	20	82,948	17,770
2,175	6,924	85	937	90	337	156	5,267
3,000	2,500	370	..	..	..	4,500	..
10	50	530	2	..	10	9,000	100
5,185	9,474	985	939	90	347	13,656	5,367
153,142	340,593	6,524	1,353	2,232	657	97,842	45,809

as from 1st January, 1937.

Livestock—1937.

Province and District		Cattle	Sheep	Goats	Swine	Donkeys	Horses	Mules	Camels
BUGANDA—									
..	..	138,863	45,333	305,259	1,053	6	1	..	..
..	..	13,182	8,414	43,517	..	..	..	..	..
..	..	77,643	11,579	54,523	70	..	..	..	..
TOTAL	..	229,688	65,326	403,299	1,123	6	1	..	..
EASTERN—									
..	..	154,649	31,957	193,787	..	..	..	..	..
..	..	398,073	43,616	141,336	..	48	..	..	..
..	..	241,275	489,333	281,227	12	23,806	..	1	80
..	..	303,730	104,679	293,484	..	111	5	..	..
..	..	101,593	24,249	71,631	..	10	5	..	..
TOTAL	..	1,199,320	693,834	981,465	12	23,975	10	1	80
NORTHERN—									
..	..	452,998	69,210	177,673	..	5	..	..	..
..	..	132,360	39,379	129,493	46	3	..	..	..
..	..	117,002	38,067	77,892	19	15	..	1	..
..	..	10,985	25,982	94,926	..	..	..	..	..
TOTAL	..	713,345	172,638	479,984	65	23	..	1	..
WESTERN—									
..	..	218,019	90,200	180,281	141	12	..	..	..
..	..	97,253	341,612	408,103	20	..	..	..	..
..	..	51,521	41,939	86,945	..	..	..	..	..
TOTAL	..	366,793	473,751	675,329	161	12	..	..	..
GRAND TOTAL	..	2,509,146	1,405,549	2,540,077	1,361	24,016	11	2	80

European Agriculture, 1937.

Province and District	Total Acreage Cultivated	Coffee		Para Rubber	Tea	Cotton	Tobacco	Miscellaneous
		Arabica	Robusta					
		Acres	Acres					
BUGANDA—								
*Mengo ..	15,727	2,197	5,048	8,642	1,616	7	..	47
Masaka ..	821	347	441	..	33	..	..	..
*Mubende ..	190	..	190	..	..	..	..	..
TOTAL ..	16,738	2,544	5,679	8,642	1,649	7	..	47
EASTERN—								
Busoga ..	695	60	600	15	..	..	..	20
Central ..	136	118	..	..	..	..	..	18
TOTAL ..	831	178	600	15	..	..	..	36
WESTERN—								
Toro ..	3,067	2,362	45	..	555	..	..	105
NORTHERN—								
Bunyoro ..	2,384	531	678	1,193	..	..	61	76
West Nile ..	155	155	..	..	..	..	..	..
TOTAL ..	2,539	686	678	1,193	..	..	61	76
GRAND TOTAL ..	23,175	5,770	7,002	9,850	2,204	7	61	266

NOTE.—1,985 acres are interplanted areas.

Compiled from 136 Returns.

* Singo county of Mubende district included in Mengo district as from 1st January, 1937.

Asiatic Agriculture, 1937.

Province and District	Total Acreage Planted	Coffee		Para Rubber	Sisal	Sugar Cane	Cotton	Tobacco	Tea	Mis- cellaneous
		Arabica	Robusta							
		Acre	Acre	Acre	Acre	Acre	Acre	Acre	Acre	Acre
BUGANDA—										
*Mengo	8,039	88	436	685	..	6,202	82	125	371	75
Masaka	447	5	66	100	..	223	51	..	..	32
*Mubende	..	..	..	..	..	..	..	..	..	..
TOTAL	8,486	93	502	785	..	6,425	133	125	371	107
EASTERN—										
Busoga	10,185	55	188	400	..	9,457	60	..	..	25
WESTERN—										
TOTO	40	40	..	..	..	..	..	..	..	..
NORTHERN—										
Bunyoro	7,242	..	..	..	7,200	..	..	42	..	..
GRAND TOTAL	25,953	188	690	1,185	7,200	15,882	193	167	371	132

NOTE.—55 acres are interplanted areas.

Compiled from 22 Returns.

*Singo County of Mubende district included in Mengo district as from 1st January, 1937.

Details of Machinery at Gineries in the Uganda Protectorate.—1937 Season.

Province and District	Ginneries		Total Registered Ginning Capacity Expressed as Single Roller Gins	Gins			Saw	Seed Openers	Presses		Engines		
				Roller		Hand			Power	Steam	Oil	Suction Gas	
				Working (Licensed)	Silent								Single
EASTERN—	21	14	569	373	34	..	24	..	20	13	9	1	
	6	1	131	97	5	2	6	..	6	1	4	1	
	13	4	288	210	..	2	13	1	12	10	2	2	
	16	9	336	198	14	8	16	4	15	5	2	10	
	TOTAL	56	28	1,324	878	53	12	59	5	53	29	17	14
BUGANDA—	51	13	912	760	6	1	55	2	49	40	9	8	
	9	1	158	152	..	..	9	..	9	7	2	..	
	4	1	48	42	..	..	4	3	4	4	..	..	
	64	15	1,118	954	6	1	68	5	62	51	11	8	
	TOTAL	64	15	1,118	954	6	1	68	5	62	51	11	8
NORTHERN—	9	8	261	122	38	..	10	..	9	8	2	2	
	3	2	45	32	..	..	3	..	3	2	..	..	
	6	..	67	55	..	..	6	1	4	6	..	..	
	1	..	24	..	12	..	1	..	1	1	..	..	
	TOTAL	19	10	397	209	50	..	20	1	17	18	2	2

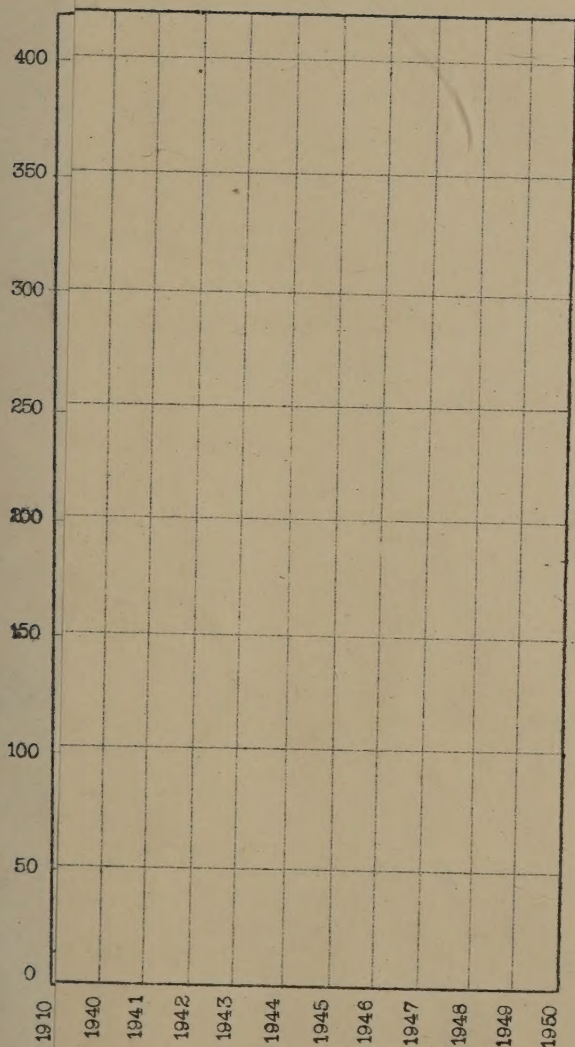
WESTERN— Toro Ankole	..	..	1	..	6	6	..	..	1	..	1	..	..
TOTAL	..	..	1	1	6	6	..	..	1	..	1	..	..
GRAND TOTAL	..	..	140	194	2,852*	2,047	109	13	148	11	133	99	24

*NOTE.—The apparent increase in this total is due to the omission from previous totals of one saw gin that was registered but not installed.

Uganda Cotton Exports.

Country of Destination	1933		1934		1935		1936		1937	
	Centals	£	Centals	£	Centals	£	Centals	£	Centals	£
United Kingdom ..	234,179	521,655	88,668	208,586	39,892	103,522	115,152	281,970	35,369	103,383
Ceylon ..	..	..	400	1,160	800	2,020	..	..	1,200	4,020
India ..	..	..	792,904	2,066,062	926,488	2,610,686	649,399	1,707,427	929,727	2,928,902
Union of South Africa ..	..	..	..	..	..	..	6	11	..	..
Zanzibar ..	..	..	4	10	..	..	..	..	..	..
Tanganyika Territory ..	10	22	7	12	8	14	6	13	4	7
Germany ..	7,310	16,593	3,892	8,814	17,539	38,335	26,181	65,468	5,119	13,246
Belgo-Luxemburg Economic Union ..	1,312	2,990	322	824	14,186	31,446	8,268	20,640	14,448	40,166
Spain ..	40	84	3,117	7,971	..	..	1,848	4,620	..	..
Estonia ..	..	..	..	..	..	..	2,000	5,100	..	..
France ..	200	420	12	31	9,354	23,337	3,732	9,098	1,592	4,576
Greece ..	100	210	..	..	..	..	..	..	..	..
Italy ..	946	1,994	2,173	5,835	2,264	6,654	3,936	9,579	2,843	8,328
Latvia ..	..	..	..	..	..	..	2,000	5,170	2,673	8,004
Netherlands ..	..	..	..	..	1,200	3,300	2,000	4,920	800	2,660
Poland-Danzig ..	..	..	660	1,584	..	..	32	84	3,752	12,122
Portugal ..	300	630	..	..	..	..	4,770	12,074	843	2,590
Sweden ..	..	..	..	..	..	..	3,800	10,450	5,600	17,760
Union of Socialist Soviet Republics (Russia) ..	..	..	864	2,234	1,000	2,750	..	..	..	..
China ..	9,200	19,510	10,841	27,427	..	..	19,601	50,352	17,000	54,270
Japan ..	146,837	318,194	238,700	597,236	236	673	442,661	1,139,903	332,592	1,069,239
Belgian Congo ..	1	4	4	10	1	2	..	..	..	..
Madagascar ..	..	..	..	..	..	..	..	..	4	10
TOTALS ..	1,179,315	2,682,210	1,142,568	2,927,796	1,012,968	2,822,739	1,285,392	3,326,879	1,353,566	4,269,283

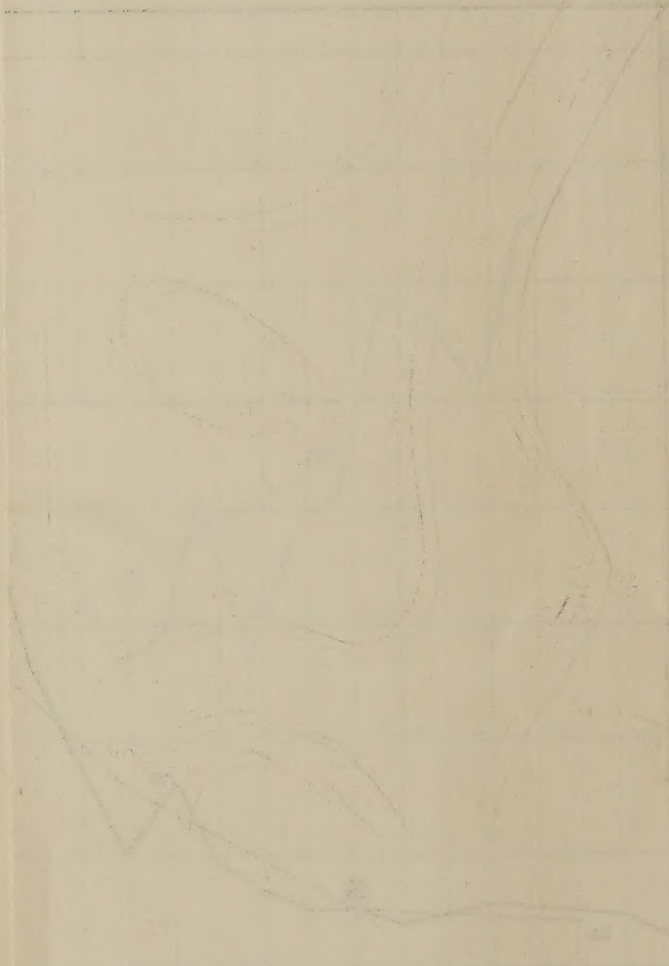
Sales in
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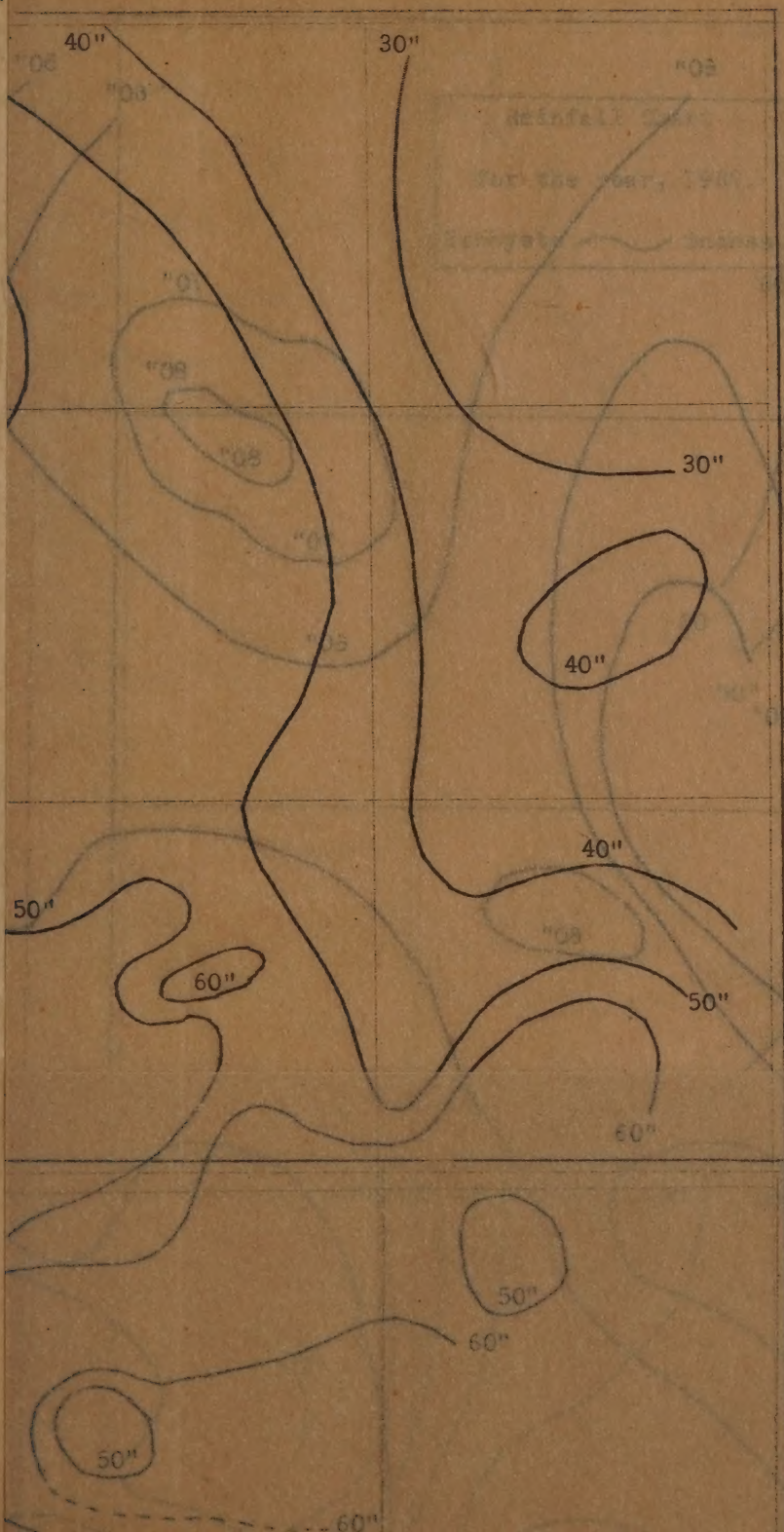
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RESEARCH



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Rainfall Chart
 for the year, 1937.
 Isohyets — inches

